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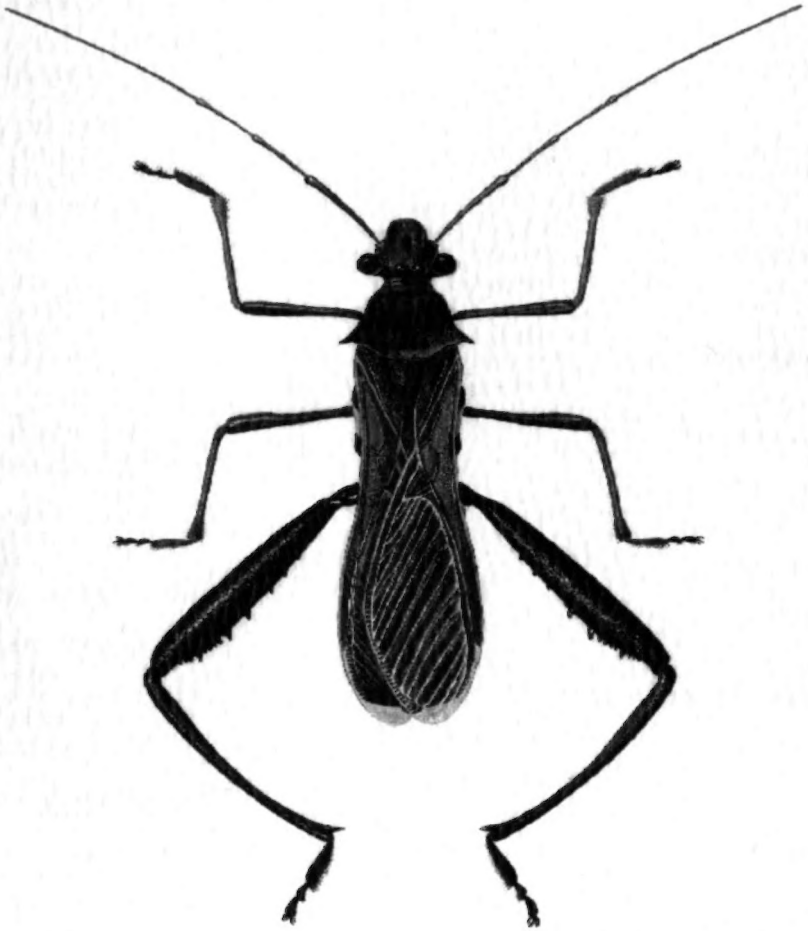

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THE COVER

The cover depicts a species of *Riptortus* in the family Alydidae.
It is one of the prize winning entries at the competition at the AES Annual meeting in Canberra.
The editor will be pleased to learn the name of the artist and to give suitable acknowledgements in the next issue!

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CONTENTS

Editorial	2
Tom White D.Sc.	2
Blurring the Boundaries	2
Bumblebees	4
in Australia	4
in New Zealand	6
FASTS	6
Science & Parliament	8
WWW-Spinners	8
ABRS	9
Student Forum	9
Inhalent Allergy to Insects	12
Conservation Committee	12
IPM Australia	12
Life Sciences At the Brink	13
John Lawrence	14
Dampier 300	15
Regional News	
Australian Capital Territory	18
New South Wales	21
Northern Territory	23
Queensland – North	24
Queensland – South	25
South Australia	26
Tasmania	27
Victoria	29
Western Australia	32
New Publication	33
Coming Events	34

AUSTRALIAN ENTOMOLOGICAL SOCIETY - 31ST AGM & SCIENTIFIC CONFERENCE. 25-30 June 2000 Northern Territory University, Darwin

The Conference Committee extends an invitation to fellow entomologists to attend this year's AGM and scientific conference in Darwin. This is the first time the AES has ventured into the Northern Territory, and the conference coincides with Darwin's fantastic dry season. This offers members and non-members the chance to meet with colleagues and to hear their latest research findings whilst experiencing the relaxed NT lifestyle.

A brochure including the Registration Form and Call for Abstracts has been distributed in this edition of *Myrmecia*. If you did not receive a copy of this brochure or require further information, please visit the conference website

http://www.dpif.nt.gov.au/dpif/news_events/aesc.shtml

or contact Convention Catalysts who will be happy to assist you:

convention.catalysts@norgate.com.au

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COPY DEADLINE FOR NEXT ISSUE

Material for publication in the May 2000 issue of *Myrmecia* will need to be in the hands of the Editor by **Friday 21 April 2000**. All material should arrive by e-mail to laurence@ento.csiro.au; if this is not possible, fax to 02 6246 4264.

EDITORIAL

This is our second issue of *Myrmecia* as editors. Despite encouraging potential contributors to sit down and tell us all what exciting things are happening in Australian entomology, we have received little in the way of comment in the past three months. True, several friends have said really encouraging things, like "Nice to see you got *Myrmecia* out on time", or even "You managed to get it done in time then?". But contributions? No way! It is difficult to believe that we live in one of the most exciting parts of the world entomologically, and that economic entomology faces some of its greatest challenges on this continent.

The lack of criticisms is even more un-nerving. Are there many members like my colleague who expressed surprise sometime after Christmas that I was involved with *Myrmecia* – our November issue still sitting on the desk unopened? True, we did receive one criticism. And in vehemence of expression it largely made up for the lack of numbers. One PhD student telephoned to complain bitterly at there being no mention in *Myrmecia* of their name and work. I tried to explain that I was merely the editor; I cannot know personally every entomologist in this vast country. I can encourage our Councillors, but it is up to the members to ensure that *Myrmecia* contains what they want to include. Sadly, when we suggested to this student that an informative article would be welcome, we were informed that this was not possible due to other commitments. So now none of us will ever know that student's prowess (or even name and university – because I forgot to make a note!).

Similar reticence arose at the Dampier 300 conference in Perth, when I asked a couple of students to produce an overview of what they found interesting and boring at this biodiversity meeting. One leaped up with a resounding "No!" that made me think that one of those fearsome WA tabanids had struck home. The other expressed a fear that giving an honest opinion of certain talks might have career implications. So we reached a compromise – I would be given appropriate unprintable opinions, and I would then print these over my own name! No wonder Peter and Penny are going to California: entomology students there are far less mealy mouthed in commenting on their elders and dotards.

Despite your reticence, fellow entomologists, the editors continue to encourage you to send us your ideas and comments, your letters and articles, as well as your meeting reports and appropriate advertisements. And do ask your relevant Councillor to say something about you.

On more domestic issues, we have changed printers, and Blackwell Scientific is seeking economies in production. Despite meeting our own production dead-line, *Myrmecia* and the *Journal of Australian Entomology* failed to appear until the very last day of November. Those of you who received reprints from that issue of the *Journal* with blank spaces where your pictures should have been, or whose reprints went to California rather than to Canberra, or whose replacement set of reprints had illegible images - will understand our pique directed at publishers and printers. More positively, we have included in this issue various articles and comments about entomology around Australia, and an initiative from some younger entomologists that we hope will interest you.

Editors

TOM WHITE D.Sc.

The Society extends its congratulations to **Tom White,** Honorary Research Fellow at the Waite Campus, who, as reported in **The *Adelaidean***, was awarded a Doctor of Science Degree at the University of Adelaide October Graduation Ceremony.

Dr Thomas Charles Raymond White graduated in science from Auckland University, and then with a forestry degree from Edinburgh University, before working as a forest entomologist at the New Zealand Forest Research Institute. There, his studies of outbreaks of indigenous and introduced insects convinced him that the accepted concept of regulation of insect populations by predators, parasites and diseases, did not fit with his own observations of the changes in abundance of these animals.

As a result, he accepted a Wool Research Trust Fund Fellowship at the Waite Agricultural Research Institute, to study for his PhD with Professor HG Andrewartha, investigating outbreaks of lerp insects on eucalypts. This led to his hypothesis that the numbers of these insects were determined by the

effects of weather on the quantity of their food, rather than by the actions of other animals.
Thirty years later Dr White published his book 'The Inadequate Environment'. There he completed a shift away from the majority-view of the regulation of animal populations by density-dependent factors, to an alternative view, where population numbers are controlled by the capacity of their habitat to support them. This has opened up new ways of thinking, and more balanced approaches into investigations of populations; away from the 'Systems (or top- down) Paradigm' of the regulationists, to the 'Natural History (or bottom-up) Paradigm', which invokes environmental limitation as the major influence on animal populations. Many of his papers have had a huge impact on this ongoing debate, with one of them being among the five most cited papers in Environmental Sciences. The continuing wide citation of his papers demonstrates his acute observational skills and visionary perception of complex ecological interactions. His international peers rank Dr White among Australia's most important ecologists, along with AJ Nicholson, HG Andrewartha and LC Birch. In the words of one book critic, Dr White succeeded in formulating and supporting with sufficient examples, one of the very few 'general rules' that dominate ecology.
Dr White was a Senior Lecturer in Zoology at Adelaide before being appointed as Foundation Professor of Biology, and Head of the School of Natural Resources, at the University of the South Pacific. He then became Dean of the School of Applied Science in the Riverina-Murray Institute of Higher Education. He retired in 1987 and, as an Honorary Research Fellow at the University of Adelaide, wrote his book, published further papers, and continued as the Australian Zoological Editor for 'Oecologia'. He also lectured and consulted overseas, including as lead speaker at a Gordon Research Conference in 1989, and in 1998 as a visiting Professor at Italy's University of Padua. Today he continues to be an active participant in an international discussion on major ecological issues to which he has made a great contribution.

BLURRING THE BOUNDARIES IN FAR NORTH QUEENSLAND

How many Entomologists can have the advantage of working in a team of plant health scientists? The Northern Australia Quarantine Strategy (NAQS) provides just that opportunity and blurs the boundaries between the disciplines of Botany, Plant Pathology and Entomology.
NAQS was established, within the Australian Quarantine and Inspection Service, in 1989, as a strategy to improve quarantine security across the vast, underpopulated, northern coastline of Australia. This region is not only underpopulated, but is adjacent to the highly populated territories of our nearest neighbours, Indonesia and Papua New Guinea (PNG). The gap between the tip of Cape York, and the coast of the Western Province of PNG is only 125 km, compared with a gap of around 225 km between Wilson's Promontory and Stanley in Tasmania! Moreover, the islands of the Torres Strait are Australian Territory, and lie as close as 5 km to the coast of PNG. These islands provide ideal stepping-stones for plant pests and diseases into Australia, and these movements are further assisted by traditional travel of the inhabitants.
The NAQS Entomologists are based at Broome in WA, Darwin in NT and Mareeba (on the Tableland near Cairns) in Queensland. Following the boost to funding, in the wake of detecting Papaya fruit fly in Cairns in 1995, there is now a team of 7 at Mareeba, including 3 in the entomology group (2 scientists and 1 technician). But for 4 years prior to that there was only one Entomologist and one Botanist. The entomology team shares a laboratory with the 2 plant pathology staff and 2 botany staff. All work on Plant Health, which includes weed detection.
There are many weeds, plant diseases and pests on the island of New Guinea that do not occur in Australia. This number has increased recently as a result of the Indonesian transmigration program, which moves thousands of farmers along with their planting stock, from Java and Timor into Irian Jaya, adjacent to the border with PNG.
The role of the NAQS Plant Health team is to detect these new problems early, and to promote border-control measures to keep them off-shore, or notify appropriate State Departments, who then manage the control of any incursion following on-shore detections. The entomology team at Mareeba manages a series of 120 fruit fly traps throughout the Torres Strait and northern Cape York Peninsula. A further 22 traps, on Cape York Peninsula, are managed through the agency of the Queensland Department of Primary Industries. They also participate in regular surveys, with the rest of the Plant Health team, into the Torres Strait and on Cape York Peninsula. Also, in collaboration with overseas counterparts, surveys are carried out in Irian Jaya, Timor and PNG.
The list of entomological 'first detections' includes: - red-banded mango caterpillar (*Deanolis sublimbalis*), and mango leafhoppers (*Idioscopus nitidulus* and *I, clypealis*) in Torres Strait in 1990. Spiralling whitefly (*Aleurodicus dispersus*) in Torres Strait in1991. Asian honey bee in PNG (*Apis cerana*) in 1992. Asian

papaya fruit fly (*Bactrocera papayae*) in Torres Strait in 1993. Varroa mite, a parasite of bees, (*Varroa jacobsoni*) in Torres Strait in 1994. Spiralling whitefly on Cape York in 1995. Melon fly (*B. cucurbitae*) in Torres Strait in 1996. And so, here on Australia's northern boundaries, we continue to fulfil the objective of AQIS - 'protecting Australia's way of life'.

Judy F. GRIMSHAW
NAQS Entomologist, Mareeba

BUMBLEBEES –

AUSTRALIA'S ENTOMOLOGICAL RABBIT?

We understand from Robert Moore of Environment Australia that, in December 1997, an application was made to import the European bumblebee, *Bombus terrestris*, but since legislation requires consultation with each State and Territory on the import of a live animal not previously approved for importation, the proposal was referred to State and Territory conservation and agriculture agencies for comment. The wide range of concerns expressed were submitted back to the original applicant for consideration in April 1998.

Two general issues were raised: possible adverse impacts of feral *B. terrestris* on Tasmanian ecosystems, and potential for *B. terrestris* to pollinate and increase seed production of weed species. More specifically, the following points were raised: 1, lack of assessment of native bee species for use as commercial pollinators; 2, potential for escape of *B. terrestris* from greenhouses leading to establishment of feral populations; 3, capacity for *B. terrestris* to colonise extensive areas of Australia; 4, capacity for *B. terrestris* to feed from a wide range of native plant species; 5, potential ecological impacts from damage to native species; and 6, potential ecological impacts from competition with native insects, birds and mammals for food supply and nesting spaces.

In December 1999 a workshop was organised by the Tasmanian Museum to discuss the issues raised by Environment Australia. Until those issues are addressed, the relevant Commonwealth, State and Territory agencies cannot make a proper assessment of the risks such an importation could impose if *Bombus terrestris* is to be commercially available and used in Australia.

Bumblebees are superior to honeybees in pollinating certain buzz-pollinated crops, such as tomatoes, and there would be clear economic advantages in their use for this purpose. But it is by no means flippant to remember that rabbits brought economic advantages – to some people in Australia. Many older people from rural southern Australia will have grown strong on cheap underground mutton, and made useful earnings trapping these pests. Indeed, even at the peak of the rabbit plague, some individuals found it much to their economic advantage to introduce the animals to new areas across Australia. The problem is to weigh such economic advantages against public costs.

Is the bumblebee the entomological equivalent of the rabbit? In considering this, we asked various individuals with professional interests in bumblebees to give *Myrmecia* readers some facts and opinions. Clearly the matter is controversial, because no one can predict the long term effects of introducing yet another foreign organism. As professionals we should perhaps reflect with humility that some of our most noxious pests, from cane toads to African thorn trees, have been introduced by professional colleagues with the best of agricultural intentions. Not everyone we approached was willing, able, or even permitted by their employers, to write for us. However, here are some comments taken from messages we have received from South Australia and from New Zealand.

For those wishing to know more about *Bombus* and other bees the following sites may be of interest:

http://www.mearns.org.uk/mrssmith/bees/bees.htm
http://www.tmag.tas.gov.au/bumblebees/bee_survey.htm
http://pioneer.mov.vic.gov.au/chaec/topics.html
http://www.dpi.qld.gov.au/dpinotes/health/plantpests/aph99018.html
http://www.zeta.org.au/~anbrc/faq.html
http://www.zeta.org.au/~anbrc/faq.html
http://www.environment.gov.au/life/general_info/biolinks/biolink9_2.html
http://www.brs.gov.au/aphb/aha/reports/aahr9604.htm

Laurence MOUND
Tish SILBERBAUER

BOMBUS IN AUTRALIA?

Bombus terrestris is a primitively social bumblebee from northern Europe, although subspecies occur in warmer areas (eg. Sardinia). Mated queens hibernate during winter, founding nests solitarily in the ground in spring, their colony increasing linearly to between 300 and 500 individuals (one queen plus workers), before sexuals are again produced. Colonies die at the beginning of autumn, when the newly eclosed queens mate and hibernate.

B. terrestris is renowned for foraging under cool conditions (13°C), and several plant species in Europe depend on bumblebees for their pollination. The flowers of such plants are adapted to bumblebees, requiring either a bee of a certain size or weight for pollination, or they need a large buzzer to release

the pollen.
Bumblebees are used commercially to pollinate tomatoes in greenhouses in Europe, North America, Israel, Japan and New Zealand. Through their buzzing, they vibrate the anthers and are more effective than honeybees at pollinating tomatoes, increasing crop yields by 10% compared to pollination with handheld electrical vibration. In Australia, tomatoes are now grown preferentially in greenhouses because of the possibilities for integrated pest control, but tomatoes in greenhouses need pollinators, and bumblebees are much preferred over electrical vibration. Tomato growers and hydroponics associations are thus pressuring the government to allow the introduction of bumblebees into Australia.
In contrast to the clear commercial advantages of bumblebees, any negative effects of introducing another foreign organism to Australia are speculative. Despite this, it is in everyones' interests to consider such speculations, and to attempt to develop a body of relevant information on the likely effects if bumblebees were to become feral on the Australian mainland.
At the end of the last century, three bumblebee species were introduced to New Zealand, and these are now widely distributed. In Japan, *Bombus terrestris* was introduced a number of years ago and is now spreading over the cooler areas. Seven years ago, one bumblebee queen (*Bombus terrestris*) was accidentally or illegally introduced onto Tasmania, and the species has since spread over the length (but not yet the width) of the island. Thus, the species is well able to flourish in different habitats. It has been suggested that if introduced to Australia, bumblebees would remain largely in urban and suburban habitats where there is a more continuous supply of plants in flower. But other entomologists have little doubt that once introduced onto the mainland, bumblebees will spread over the cooler parts of NSW, VIC and SA, with the following three possible effects:
Increased competition with other nectivores
David Paton's (Adelaide University) work shows that at high densities, honeybees displace honeyeaters from flowers during the daytime. Under these conditions the honeyeaters forage relatively more during the early morning and late afternoon. But *B. terrestris* forages early in the morning and at cool temperatures, and would be expected to decrease nectar availability for honeyeaters during a period of the day when they are relatively unaffected by foraging honeybees. Andrew Hingston (University of Tasmania) has shown that foraging bumblebees actively displace native bees from flowers. Apart from active displacement early foraging by bumblebees might deplete flowers to the detriment of our notoriously late rising native bees.
Effects on native flora
Several native plant species have co-evolved with, and are dependant on, one or two species of bird or insect pollinators. Disturbance by bumblebees could decrease the density of these natural pollinators, through competition for nectar, and seed production could be jeopardized, a disastrous effect that would be observable only in the long term.
Effects on the spread of weeds
Bumblebees could prove the ideal pollinator for a number of so-called sleeper weeds, introduced plant species that occur currently in low densities, also garden plants that have not as yet "straddled the fence" and become pests
Bumblebees are specialised pollinators of foxgloves in Europe. These plants are a pest in New Zealand, but not yet in Victoria, possibly because of limited seed production. With bumblebees in Victoria, foxgloves could become a problem in disturbed areas and roadsides, and could hamper revegetation by native plants. Other potential weed species that might be affected include *Polygala*, rhododendron and snapdragon.
There is a suite of solanaceous weeds, related to tomatoes, that need buzz pollination, and this group contains many poisonous and prickly species that could increase and cause problems to the dairy and cattle industries.
Australia has a history of introduced species inadvertently becoming pests, subsequent control expenditure far outstripping the benefits of the original introductions. To prevent such mistakes, extensive and time consuming research is needed. Therefore it will (and should!) take years of research before an eventual introduction of bumblebees might take place. Meanwhile, there are native bees that should be considered for pollinating tomatoes in greenhouses. Together with Michael Schwarz and Zeta Steen, I have completed preliminary investigations with that native carpenter bees (*Xylocopa (Lestis) spp.*), and demonstrated that these pollinators can give 10% increases in tomato weight yeilds (Hogendoorn et al., Journal of Apicultural Research, in press). If adequate and economical methods can be developed to breed these bees in captivity, their commercial use instead of bumblebees becomes option. Just as the search for native biological control agents against pest insects has proved so successful in recent years, it could be worth while for all parties involved to explore the possibility of exploiting native pollinators rather than

risk the consequences of introducing yet another species to Australia.

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BOMBUS IN NEW ZEALAND

Bumble bees were purposely established in New Zealand from 1885, to improve the pollination of red clover seed crops. There are many differences between New Zealand and Tasmania, but an overview of their 'impact' during their 115 years here may be of interest to Australian entomologists.

B. terrestris and *B. ruderatus* occur essentially throughout New Zealand, while *B. hortorum* and *B. subterraneus* are more restricted, *B. hortorum* to eastern areas of the South Island and also the southern quarter of the North Island, while *B. subterraneus* is found only in the inland high country of the southern South Island. *B. terrestris* is usually the most common species, and can be found on the wing almost throughout the year, although abundance peaks in spring and summer.

A compilation by Dr. Rod Macfarlane of flower visiting records in New Zealand shows that although all bumble bee species forage primarily on introduced flowers, some native species are also visited, *B. terrestris* having been recorded on 46 native species.

Bumble bees have one major characteristic which separates them from all other bee species in New Zealand, both native and introduced, and that is that they fly and forage at much lower temperatures. Native bees are rarely active below about 14 degrees C, and honey bees don't fly below 10 degrees C, whereas bumble bees can be fully active down to near freezing point.

Although bumble bees have been a conspicuous part of New Zealand's insect fauna for 115 years, I know of no concerns as to their possible negative impacts. In 1980 (New Zealnd Journal of Ecology, 3: 104) I looked at interactions between native and introduced bees, and found no obvious detrimental interactions between the two groups. I know of no other papers which have broached the topic, not in regard to possible impacts of bumble bees on other insects, nor any from a botanical standpoint which might be concerned with the pollination of native flowers.

Far from being detrimental for the pollination of some native flowers, there is a possibility that bumble bees are replacement pollinators for some of the native pollinators which have disappeared as a result of human-related activities. For example, a number of native flower-visiting bird species are now extinct or their numbers and ranges are greatly reduced. New Zealand ecological conditions differ substantially from those of Australia. For example, introduced plant species now outnumber the species of native plants, and the 2,600 introduced species of insects represent 13% of the insect fauna of this country (Dr R. Emberson, pers. comm.).

Bumble bees are looked upon as being very beneficial and very valuable commercially, in New Zealand. Their large size and ability to fly at low temperatures make them very effective pollinators of numerous crops when honey bees are confined to hives by cool weather. The value of bumble bees is maximised for spring or early-summer flowering crops such as fruit trees and kiwifruit, when the weather may often be cold and changeable.

B. terrestris has been reared under a factory production-type basis for more than a decade by several commercial operations. Most colonies are used to pollinate tomatoes in glasshouses, but some are used for outdoor crops such as kiwifruit and occasionally even lucerne, and some are sold into schools for educational purposes. During the last 20 or so years up to about 65 colonies annually of long tongued bumble bees have been trap-nested in the field and sold to improve the pollination rate of red clover. The commercial value of bumble bees is large, and consequently bumble bees are propagated commercially by several enterprises and are sold throughout the country for pollination of several different crops, and are exported.

None of these commercial activities has given rise to any expressions environmental concern. This may be because of the overwhelming importance of many other agencies that are perturbing the native environment. The impact of bumble bees in Australia might be very different from that in New Zealand, but it is hoped that these notes will be of interest to those concerned with the impacts of bumble bees in Australia.

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FEDERATION OF AUSTRALIAN SCIENTIFIC & TECHNOLOGICAL SOCIETIES

Peter Cullen retired as President of FASTS at the end of 1999. An abridged version of his final report is given here, because much of it is relevant to all of us as scientists. He commented that this is a

time both to celebrate the achievements of FASTS, and to reflect on how and what might have been done better over his two years as President, and continued....

Celebrating might strike you as strange when we see the sustained attack on our Universities taking a heavy toll on science. The general lack of funding from Government is of grave concern for the future of our country. But FASTS does have plenty to celebrate: we are now a mainstream player in science policy issues, and we have consolidated our reputation as a serious and well-respected voice for science.

Our membership drive over the last year has brought us some new Societies, but we are also losing a few who obviously do not feel they get value for money from FASTS. It is clear we need to do more to keep societies and their members aware of what FASTS is doing, and we need to do more to find out what they think FASTS should provide. We must also increase our rate of subscription, because we need an annual income of around $150,000 a year to do the things that need to be done. Some of this will be to pay professionals to help us develop our positions and analyses of situations.

FASTS is consulted on a range of science issues. The Prime Minister's Science Engineering and Innovation Council (PMSEIC) is now a key source of advice to government, as the only forum that allows a whole-of-Government approach to be developed on science issues. FASTS' President is an ex-officio member of PMSEIC, of which one Standing Committee comprises the non-Ministerial members who meet from time to time to identify issues that might be developed for presentation to the Council. This provides an opportunity for FASTS to raise issues. I raised the issue of the development of antibiotic resistant bacteria resulting from inappropriate use of antibiotics as growth stimulants in livestock. This was an issue brought to us some time ago by the Australian Society of Microbiology. I co-chaired the working group on Dryland Salinity which reported to the Council in November last year, and at the invitation of the Chief Scientist and Ministers concerned, I have been involved with the development of the Government's response to the Salinity report.

The issuing of occasional papers on matters of importance is a new step for FASTS. Our biotechnology paper helped build the pressures for a successful budget outcome in this area. The second occasional paper, Scientists Commercialising their Research, has been well received and will be presented to the PMSEIC. It will be a useful building block to the Innovation Summit early next year. Other sectors of FASTS should think about mobilising their energy and thinking, to develop Occasional Papers on matters of concern to them. In my view, this Government, is interested in good ideas; they just get tired of being told to send more cash without the new ideas.

Over the last two years, FASTS has developed its innovative and influential Forums, at the National Press Club in Canberra. These give us incredible exposure and let us present our ideas whilst developing alliances with other organisations that seek to influence Government.

The haemorrhaging of the Universities continues with the failure to provide salary supplementation, and a number of expensive science courses are in serious difficulties. Australia is starting to lose scientific capacity. More and more university staff are now admitting the decline in quality of what we offer students. A number of our major universities have made serious cutbacks in science faculties during the year. We have not yet succeeded in getting the Government to treat this issue seriously.

I think the Government believe the solution is to shift the costs of higher education from the taxpayer to the people they see as the immediate beneficiaries - the students and their parents. The key to changing the Government's attitude is to argue the case for public investment and its consequent major economic returns. The Government's cutbacks to R&D are all the more perplexing when seen in the international context. Most of our major competitors are increasing their support for research.

The Government is interested in innovation where it can convert good ideas into industry, wealth and employment. We need to establish the point that a strong basic and applied research sector is the fundamental driver to innovation; and that it is necessary, although not sufficient, for us to become a knowledge economy.

I have taken the view during my Presidency of FASTS that this Government is interested in stimulating the economy, and so the way forward is to push the role of R&D in underpinning the new knowledge economy. Arguing that basic science is the fundamental building block for the knowledge economy is all very well. But our own study of commercialising research shows people do not know how, or lack interested in how, to commercialise. It is thus hard to argue that this is a smart investment. We need to build stronger links with business and industry, to get their support for our lobbying for science. One way to achieve this is to use our undoubted media skills to target the financial press.

Peter Cullen is now replaced as President of FASTS by Sue Serjeantson, who produced the report below

on a Day in Parliament.

SCIENCE & PARLIAMENT

FASTS organised a highly successful 'Science meets Parliament' day on 24 Novemnber, and the following is an abridged version of a report from the new President of FASTS, Sue Serjeantson. Participating scientists and technologists came from nearly all of the 45 Member Societies of FASTS, and three quarters of them rated their meetings with Parliamentarians as "very positive" or "very encouraging". In their feedback sheets, participants made three clear observations on Parliamentarians:

1. MPs were fascinated by accounts of research being undertaken by scientists, so that most 30 minute meetings extended to an hour;
2. MPs want to maintain contact and be kept informed on issues, particularly electorate issues;
3. MPs urged scientists to communicate better with the electorate, both directly and through the media, as a means of maintaining parliamentary pressure.

It was a great opportunity to promote the value of Australia investing in research. One highlight was the reception at Parliament House for 300 scientists and MPs hosted by the President of the Senate, the Speaker and the Minister. Another was meeting with key Parliamentarians such as Deputy Prime Minister John Anderson, Education Minister David Kemp, Communication Minister Richard Alston; ALP spokespersons Bob McMullan and Michael Lee; and Deputy Leader of the Democrats Natasha Stott Despoja. Two thirds of all MPs and Senators met with a scientist that day, an outstanding commitment in their busy schedules. Fifty-one Parliamentarians were asked the direct question "how is science doing?". Forty-two said science has problems, the most common reasons being that it needs more funding, or that it needs to raise public awareness. A similar Science Day is to be organised by FASTS in 2000.

WWW-SPINNERS

Thanks to Stephen Doggett, Penny Greenslade, Anne Dollin and Peter Gregg for suggesting web sites for this edition.

Institutional sites

The Medical Entomology Department at Westmead Hospital: **http://medent.usyd.edu.au/**. This site is devoted to all things relating to Medical Entomology, and contains a wide range of fact sheets & photographs. There is also a web site for their Arbovirus Surveillance and Mosquito Monitoring Program at:
http://www.arbovirus.health.nsw.gov.au/. The principle aim of this site is to provide the monitoring and surveillance results but there is also a stack of information on mosquitoes and arboviruses.

Australian Cotton Research Institute (ACRI)/ Australian Cotton CRC:
http://www.mv.pi.csiro.au/ This site contains the contact details for all the scientists, entomologists and otherwise, working at the ACRI in Narrabri, most of whom are involved with the Australian Cotton CRC. It gives a run-down of the various research areas of ACRI and the structure, partners and research directions of the Australian Cotton CRC.

Taxon-specific sites

Australian Native Bee Research Centre:
http://www.zeta.org.au/~anbrc/. This site contains a lot of information on Australian native bees and includes a FAQ, Aussie Bee Shop (including booklets and videos on keeping stingless bees), Help Save Native Bees, Nest Care, Australian Native Bee Research Centre, Join in Research, Aussie Bee Bulletin, Native Bee Seminars.

A world list of Collembolan species with some illustrated keys to genera and information on species distributions, references etc is at:
http://www.geocities.com/~fransjanssens/

The Ant Colony Developer's Association:
http://www.antcolony.org. The site contains, amongst other things, information on joining the Association, breeders lists, contact information, and a link to a Japanese site that has lots of "ant facts" that are aimed at the general public. There are also some nice photos and photomicrographs, and a guide to finding queens on their nuptial flights (in the northern USA).

If you are interested in ants, then the Japanese site **http://ant.dna.affrc.go.jp/Ant.WWW/htmlsE/index.htm** will keep you busy for hours.

Job sites

The Entomological Society of America job site:
http://www.entsoc.org/careers/. It is a list of predominantly North American jobs and postgraduate opportunities.

The Entomological Society of America has also put together educational resources for the aspiring entomologist: **http://www.entsoc.org/careers/entoworks.html**. It includes questions like, what is entomology, what do entomologists do, what skills will I need, how should I prepare, how should I find a place to study or a scholarship. Also included are some brief interviews with entomologists, and some facts about insects.

Journals

New Entomological Taxa (NET) Home page:
http://www.sciref.org/net/index.htm A new print

and electronic monthly publication designed to provide entomologists with access to the literature on new arthropod taxa and nomenclature changes. The journal is divided into eight separate taxonomic sections and these are available to subscribers who want more focused, less costly alternatives to the full edition of NET.

There are many hundreds of journals that will allow you to view abstracts of current and past issues, but (understandably) charge for access to the full text of papers. These abstracts are also easily available through services like Current Contents, Agricola and many others, so won't be listed separately here.

Societies

The Entomological Society of New Zealand has a new web site:

http://www.rsnz.govt.nz/clan/ento/. This site is brand new, but is looking good so far. It will be one to keep checking back to and watch developments.

Royal Entomological Society:

http://www.royensoc.demon.co.uk/. The site is divided into: Officers and registrar, aims, history and structure, how to join, rooms and facilities, publications, Society news, Entomology 2000, activities, meetings, SIG'S - Special Interest Groups, library, postgraduate bulletin board, places of interest to visit, RES Representatives.

Others

Entomology Index of Internet Resources:

http://www.ent.iastate.edu/list/. A massive site with an amazing range of entomological internet resources (including a search engine or two). A good place to start, particularly if you're looking for US-based information.

Entomology Events Calendar 2000: **http://www.sciref.org/links/EntEvent/index.htm**. The web site lists events devoted to general or applied entomology, including insects, arachnids (including acari), and myriapods. This seems to be a fairly new list, so is worth going back to from time to time to check for new listings (for example, our annual meeting is not yet listed there!).

Please email me at ***lsilberb@metz.une.edu.au*** if any of these links are dead. Also, if you have any favorite web sites, please contact me and I'll do my best to list them in the next edition of *Myrmecia*.

Tish SILBERBAUER

AUSTRALIAN BIOLOGICAL RESOURCES STUDY

ABRS, as it is known colloquially, is one of the major funding agencies for biological research in Australia. Each year it awards a series of grants to a wide diversity of biologists, with a view to increasing our understanding of the status and origins of the Australian flora and fauna. The sums involved range up to about 60 000 dollars but, unlike grants from the Australian Research Council, each award is made on an annual basis. This year all grantees have been issued by Environment Australia with a full list of all the awards, their size, and the subjects supported. The following comments and details are derived from this document.

Grants awarded for the year 2000 total 66, of which 22 are to support studies on insects and arachnids, and 18 to support studies on flowering plants. The total sum involved for the 66 grants is about 1.6 million dollars, with insect and flowering plant topics each attracting almost one third of this total, and the remainder spread through the other botanical and zoological subject areas. One half of the grants for insect studies are for less than 10k dollars each, in contrast to one third of the flowering plant grants. Thus the number of major research grants in these two subject areas is equal. The range of topics supported includes studies on spiders, mites and centipedes, as well as on moths and beetles, flies and wasps, and even thrips. The methods of approaching biological diversity range from descriptive accounts at species or genus level, through cataloguing and electronic identification keys, to attempts to integrate morphological, behavioural and ecological data. However, it is noticeable that botanists are now using molecular techniques routinely to a far greater extent than entomologists.

ABRS was set up originally to promote taxonomy in the support of ecological studies. Looking at the range of topics supported now it would seem that descriptive taxonomy has gradually come to have greater emphasis. Living in a land of such high biological diversity there are clearly problems with achieving a balance between descriptive and explanatory science. Each has its own individual purpose. But collaboration by taxonomists with ecologists and other biologists can generate a data base that is so much richer and more useful when trying to interpret how diversity has arisen, and how we can contribute to its future maintenance.

Editor

STUDENT FORUM

Hello again. There is now a group organising the postgraduate gathering at the Darwin conference. Thanks to **Tara Simmul** and **Emma Cottage** who will be putting their talented heads together and coming up with a plan of action for the meeting. There is still lots of room for others to join in the

organisational fun, so please contact them (Tara at tara.simmul@ffp.csiro.au and Emma via rgunning@enternet.com.au or by phone on 02 6763 1130).

Thanks to **Nigel Andrew** for pointing out the Royal Entomological Society postgraduate bulletin board web site: **http://www.royensoc.demon.co.uk/post1.htm.** It's well worth a look as it contains iinformation on the RES postgraduate meeting (sounds like it's fun) and also a good selection of postgraduate research abstracts.

Any students or recent students (ie. those who have just finished their postgraduate theses) who would like to express an opinion or to precis their research in this section, please contact me by email (lsilberb@metz.une.edu.au) or by phone (02 6773 3021).

Tish Silberbauer

RESEARCH TITLE: MUNCHERS ON THE MOVE? THE POTENTIAL EFFECTS OF CLIMATE CHANGE ON INSECT HERBIVORY

Nigel Andrew

PhD student, started June 1999

Supervisor: Dr Lesley Hughes

Changes in carbon dioxide (CO_2) levels are expected to modify current climate patterns, such as rainfall patterns and temperature ranges. It has been predicted that over the coming century temperatures may rise by 3°C, which corresponds to a 300-375 km shift in temperate zones towards the poles. Such changes may affect the current latitudinal distributions of all species. To begin to understand how distributions will change in the future, current species distributions need to be assessed. My project will focus on the changes in insect herbivore communities potentially caused by different climate regimes and the latitudinal distribution of host plant species.

I have chosen to look at insect herbivores living in the canopies of a variety of phyllodinous *Acacia* species. *Acacia* spp. are widespread (are found on 85% of the Australian continent), and diverse with approximately 1200 species, 700 of which are native to Australia. However, very few studies have assessed herbivorous insects living on *Acacia* trees in relation to distribution/ climate change. To begin with, my study will concentrate on *Acacia falcata*. This is a shrubby species with a latitudinal distribution spanning 2500km along the east coast of Australia, from Bateman's Bay (NSW 17° latitude) to Atherton (N Qld. 36° lat).

The approach I am taking for the initial part of my study will be to assess herbivorous insect communities and insect herbivory on, and plant traits of *A. falcata*. Three sites within four latitudes, covering 1550km, will be sampled for this survey.

Questions & Methods

1. Which herbivorous insects feed on A. falcata & neighbouring phyllodinous Acacia spp., and how does the insect community structure change along a latitudinal gradient?

This will be assessed by spraying insecticide (pyrethrum) on ten plants at each site, every three months. Species and feeding guilds will be identified and assessed using various univariate and multivariate techniques. Other Acacia spp. that are found within the site will also be sampled to determine if insect species are found on other closely related host plant species.

2. Does percentage leaf area damaged by different herbivores change along a latitudinal gradient?

Leaves on an entire branch from 20 tagged plants per site are photographed using a digital camera. These images will then be analysed to assess plant leaf area lost due to herbivory from different insect feeding guilds. These measurements will be taken every six months from the same leaves so changes in herbivory rates can be tracked and compared between latitudes.

3. Do plant traits between Acacia falcata populations change along a latitudinal gradient?

Individual plants of the same species may have different chemical and morphological traits at different latitudes. Such differences are a potential reason for changes in herbivore community structure. Chemical traits such as carbon: nitrogen ratios, percentage nitrogen, and defensive compounds (e.g. tannins, phenols) will be assessed on all leaves along a branch collected from 10 trees per site. Morphological traits such as leaf toughness, leaf thickness, and Specific Leaf Area (leaf area/ dry leaf mass) will be assessed on 20 leaves from 10 plants randomly sampled per site.

Future work

- To determine if ecotypic differences in plant traits or climatic differences effect current herbivore distributions a **Common Garden Experiment** will be undertaken. Seeds will be collected from all latitudes, raised in a greenhouse, then shrubs from the different latitudes will be planted out together at the same sites. Herbivores and herbivory levels will be assessed every few months.
- To determine if current insects distributions are limited by current host plant range a **Transplant Experiment** will be undertaken. Host plants are planted outside their normal range and the herbivore communities are assessed. This is the best way to predict how future changes in climate regimes may

affect the community structure of insect herbivores if there is a shift in host plant range.

- **Climate modelling** (using BIOCLIM & CLIMEX) will be used to determine the location of potential future habitat for host-plant and herbivore species.
- I may also look at what direct effects that **changes in CO2** on a particular herbivore species or feeding guilds feeding habits. Host-plants and herbivores will be put into growth cabinets with varying CO2 levels and assess feeding habits, frass production and changes in plant traits.

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FORMATION OF C.A.R.E.S. -
AN EXTERNAL STUDENT'S VIEW

Emma Cottage
PhD Student, started February 1998
Supervisors: Dr Robin Gunning (TCCI), Assoc. Prof. Peter Gregg and Dr. Barrie Entsch (UNE)

A workshop was held at the University of New England on 29-30th November 1999 to discuss the formation of CARES (Centre for Agriculture, Resource and Ecosystem Management). This centre is a collaborative postgraduate program between UNE, NSWAg and DLWC (Dept. Land and Water Conservation), aimed at encouraging research at the 'coal face'. Such a partnership has advantages to all collaborators: UNE postgraduate supervisors would be able to take on more postgraduate students, increasing the amount of funding brought into the university without excessive time and cost commitments by the university supervisors. Attracting postgraduate students to departments like NSWAg and DLWC is seen as a good way of fostering cross-department research while giving students access to expertise and facilities that may not be available in the universities.

The formation of such a centre has particular relevance to me as I am one of its "guinea pigs" in its pilot study. I am an external full-time student located at the Tamworth Centre for Crop Improvement (TCCI), undertaking a CRDC-funded PhD through UNE. My research topic is management of resistance to insect growth regulators in B-type *Bemisia tabaci* (Hemiptera: Aleyrodidae) in Australia. B-type *B. tabaci* is a serious insect pest worldwide of many plant industries. Its capacity for inflicting damage is exacerbated by chemical control being very difficult, as the insect is very resistant to conventional insecticides such as organophosphates and carbamates. My PhD is part of a larger research program on *B.tabaci* conducted by Dr Gunning and funded by the Cotton Research and Development Corporation (CRDC).

There are many advantages to studying externally in such a situation. The facilities and expertise are located in Tamworth for my particular research topic. I have doubts that my PhD topic could be done elsewhere, due to the specialised equipment and insect cultures required. A further advantage of conducting research that is applicable to industry are the increased chances of employment for the student after postgraduate study. From a mercenary point of view, the chance of industry-funded scholarships for postgraduate students is much greater if there is a collaboration between universities and government departments, for example UNE and TCCI. It is more likely that there will be fewer students per non-university supervisor in such a situation. I regard this as a major advantage, giving the student good contact with their supervisors.

Tamworth is an ideal location geographically for UNE external students. It is just over an hour's drive from TCCI to the university, so access is fairly easy. It is still far enough away to benefit from a lower general service fee, and library services such as journal photocopy requests, that only external students are entitled to.

There are disadvantages to studying externally.

It can be very isolating having no other students in a similar situation to bounce ideas off. A fair bit of travel between UNE and Tamworth is required, in order to satisfy the PhD residency period of at least 84 days over the student's candidature. The advantage of being only an hour away provides the option of being able to go up day by day, rather than having to relocate to do block residency. Not having an extensive library available on site at Tamworth is also a disadvantage, as is sorting out administration problems, which can be difficult enough, without compounding it by distance. All in all, I think that the advantages of studying externally in such a situation greatly outweigh the disadvantages. Perhaps other similar collaborations could be proposed, helping to boost numbers of postgraduate students involved with entomological research.

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National Postgraduate Conference in Ecology, Evolution and Systematics

This Conference was held in the Division of Botany and Zoology, ANU, Canberra from 20th to 22nd January, 2000. It was organised by 3 postgraduate students (**Kaska Hempel**, **Anne Peters** and **Janet Pritchand**) and 2 Academics (**Scott Keogh** and **Rod Peakall**), and sponsored by the Graduate School, ANU. The conference had various sessions including: i) Animal and Plant Ecology, ii) Reproductive Ecology, iii) Conservation and Management, and iv) Systematics. The organising committee offered several travel awards to students presenting papers at the Conference. Postgraduates came from most states and from 20 universities. More than 35 students presented very high quality papers as well as many posters. The total number of participants was more than 60, and we all enjoyed the conference. There was also a field trip to the ACT Wildlife Reserve at Tidbinbilla. As a participant I found the programme very well organised and of high quality. Although this was the first time it was held, the conference was very helpful for the postgraduates who attended.

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INHALENT ALLERGY TO INSECTS

The latest version of the Bibliography on Inhalant Allergy to Insects is now available through CSIRO Entomology's Web Page. The bibliography contains 820 references. Each reference lists the species involved in the study and has a short annotation. There is an index of species that indicates those species that have been implicated as a cause of allergies. The bibliography is searchable by keyword or it can be downloaded for local use. Access to the bibliography can be attained from the Web Page or at this address: http://www.ento.csiro.au/inhalant/allergy-biblio.html

Queries should be directed to Tom Bellas at CSIRO Entomology: <tom.bellas@ento.csiro.au>

CONSERVATION COMMITTEE

Outgoing Committee member, Geoff Williams, reports that 'flood plain rainforests' have been listed recently as a 'threatened ecological community' under the 'NSW Threatened Species Conservation Act 1995'. He nominated these some years back, but permanent listing was gazetted in August of this year. Floodplain rainforests contain many poorly known invertebrates, and this formed much of the basis for the strength of the nomination.

THE 2ND *IPM AUSTRALIA* PLANNING WORKSHOP, CANBERRA 26 OCTOBER 1999

The following report was received from Bob Sutherst. The workshop in Canberra was attended by 18 delegates from States, Universities and Commonwealth agencies.

Ron Stinner reported on his month's tour of Australia supported by a CSIRO McMaster Fellowship. Ron who is Director, National Science Foundation Centre for IPM (CIPM), runs 24 Websites including a National IPM Network (NIPMN) covering all States in the USA. NIPMN averages 5-10 million hits per month. Web access is ubiquitous throughout USA country agents, libraries and industry groups. IPM in USA is now largely driven by the Food Quality and Protection Act (FQPA).

Ron's impressions of Australia were that there is a diffuse network with tremendous amount of information dissemination, but that it is variable across pests and areas, with insufficient funding but plenty of enthusiasm, cooperation and no evidence of resistance to working together. Australia can benefit greatly from a 'portal' to coordinate public sector IPM information and activities.

Bob Sutherst said that *IPM Australia* is about partnerships and having a focused search engine to search only nominated servers by crop, by pest or region for example. In response to the question of "What's in it for me/my organisation?", the answer is adding value to existing work, not taking it over. *IPM Australia* would make individual R&D sites more visible and accessible and enable them to be linked to other sites, thus significantly raising the profile of each partner's work.

A first mock-up of a possible *IPM Australia* website, authored by Ron Stinner, was demonstrated. It emphasized the aims, open membership, welcoming of new members and inclusion of a wide range of issues and institutional links. The Web-pages were circulated to workshop participants for comment and Bob Georgeson (BRS) offered his team to design a Website for *IPM Australia*.

The take-home messages from the discussion were that *IPM Australia* is about increasing exposure and access to existing data; sharing common tools; contributing information – gaining benefits; value-adding; providing gateway and linkages; promotion – raising profile of contributing organisations; efficiency; raising standards of websites, leapfrog off

each other, and collation of information.
A Planning Session for *IPM Australia* then set a target of having an operational website and IPM Network within 3-6 months. The task needs champions for each topic, who will undertake to build content for the prototype website.
Groups worked on the following topics: Categories of information – commodities, pests, regions etc.; Identify and target users; Member services, calendar, news, software, models, contacts; Draft of Australian standards; Logo, front page criteria; Funding.
The next meeting is planned for March 2000.

Advantages of *IPM Australia* to Stakeholders
There are many organisations in Australia with information on IPM on the WWW. At present this is not easily accessible and much of it cannot be retrieved using commercial search 'engines'. *IPM Australia* will provide a means of linking these sites and facilitating access to IPM information by growers, researchers, teachers and other interested groups.
Partner organisations would be able to:
Take advantage of the greater accessibility of their site to promote their organisation while maintaining ownership of their site and responsibility for the information on it.
Add value to and enhance their web sites by making them more visible.
More readily identify expertise across Australia.
Improve efficiency through the capture of new clients, the sharing of resources and expertise and the sharing of web formats.
Seekers of IPM information would be able to:
Enter a single portal/gateway/node for IPM.
Perform searches focussed on relevant information.
Feel confident about the quality of information .
IPM Australia, by linking together this information, would enable the development of a common, coherent message to project to the community and to government and grower groups.
Comments and offers of help to build this collaborative Australian teamwork effort are welcome. You can contact the Chair of the working group: Bob Sutherst, CSIRO Entomology, Long Pocket Laboratories, 120 Meiers Rd, Indooroopilly, Queensland, 4068. Tel 61 07 3214 2800; Fax 61 07 3214 2885
Email: R.Sutherst@ento.csiro.Australia.

"AUSTRALIA'S LIFE SCIENCES AT THE BRINK"

Discovery Centre, CSIRO Black Mountain, Canberra 23 November, 1999
This one-day seminar, hosted by CSIRO Entomology largely for the benefit of its scientific staff and interested clients, attracted a healthy mix of biotechnology aficionados, ecologists, GMO regulators and even a systematist. The event's triple-entendre title captured (1) the anticipation and anxiety felt in different quarters as Australia contemplates the introduction of GMOs to the market place, (2) the opportunities offered by new gene technologies, and (3) the imminent new millennium.
Contributors to the seminar included Dr Peter Coleman (Biomolecular Research Institute, Australia), Dr Tim Littlejohn (Australian National Genomics Information Service, Sydney), Dr Chris Mallett (Deputy Chief Executive, CSIRO Agribusiness), Dr Leo Hyde (Director of Research, Du Pont Australia), Dr Richard Head (Chief, CSIRO Human Sciences and Nutrition), Dr Oliver Mayo (Chief, CSIRO Animal Production), Dr Mark Lonsdale (Program Leader, Weed Management, CSIRO Entomology), Dr Jim Cullen (Chief, CSIRO Entomology) and Dr Paul Wellings (Deputy Chief Executive, CSIRO).
Harden Tibbs of the California-based business consultancy firm Synthesis Strategies Consultancy provided a stimulating introduction to biotechnology issues from the perspective of a business strategist. Of particular interest were his observations on new business models and on the so-called, second-generation biotechnology products which promise to deliver major benefits to consumers and other members of the value chain, and not only to "owners" of the new technology. There was also a timely caution to the reductionists who might believe that we have the key to life in our hands. Individual genes can be looked upon as stand-alone elements to be deployed at will, or they can be understood as elements in an adaptive information system with potentially different meanings in different genomes.
Chris Mallet of CSIRO sketched a broad picture of the international markets in which Australian commodities will compete in the next century. Our primary producers and their agents will need to focus sharply on the implications of WTO agreements and the massive purchasing power of increasingly international supermarket chains. Whether we like it or not, such market forces will influence Australian positions on GMOs.
Leo Hyde of Du Pont broadened discussion to take in the application of biotechnology to the production of industrial chemicals and pharmaceuticals. For example, one day genetically modified sugarcane could be providing organic compounds to replace petroleum products in industrial processes.
Richard Head and other CSIRO participants sketched CSIRO's developing corporate position on GMOs. Continuing debate within the organisation on some

issues was seen as constructive. That the internal debate was possible and open encouraged the perception that CSIRO would be able to provide diverse and disinterested advice to all of its clients, be they industry, the general public or regulators. The national capacity for environmental risk assessment was flagged and it will be interesting to see how CSIRO deploys its resources to boost this capacity. Later in the day Mark Lonsdale, an invasion biologist and weed scientist with CSIRO Entomology, suggested how we might approach the task, how we might place potential threats in perspective, and what we might learn from our experiences of non-GM organisms in novel environments. In fact it may transpire that new research driven by GMO issues will provide insights into longstanding threats posed by exotic weeds and arthropods.

The above is an eclectic and idiosyncratic sampling of the day's presentations and discussions. No report could be complete ... the debate is ongoing.

Ian NAUMANN
CSIRO Entomology, and
National Office of Animal and Plant Health

THE JOHN LAWRENCE CELEBRATION SYMPOSIUM AND DINNER CANBERRA, 2 DECEMBER 1999

To celebrate the achievements, and to mark the retirement, of John Lawrence after 22 years at the Australian National Insect Collection, a special day of seminars was held at the conference venue of the new Discovery Centre in CSIRO's Black Mountain site. There were 22 speakers, mostly from Australia and North America.

Ebbe Nielsen (ANIC) introduced the prime subject, noting that John had been hired to work on chrysomelids among others. Coleopterists around the globe should be glad that he ignored this brief. The Lawrence Symposium opened with a review of the diversity of Coleoptera in rainforests, by **Simon Grove** and **Nigel Stork** (James Cook University, Cairns). There are currently estimated to be 4.8-6 million species of organisms, 20% of which are Coleoptera, with Curculionidae the largest family. Simon's work on saproxylic beetles showed a long-term response to logging by this guild. **Al Newton** (Field Museum, Chicago) and **Eric Matthews** (South Australian Museum) then gave us some glimpses of John's career in two continents (although John's research has always been global). A developmental phenomenon noted was that frontoclypeal setae increase but vertex setae decrease with age. **Jyrki Muona** (Finnish Museum of Natural History, Helsinki) gave a stirring speech in support of the significance of John's work, noting that John's particular interest followed that of the late Roy Crowson, the 'holy trinity' of wood, fungus and beetles as the driving force for the origin of polyphagan diversity. After refreshment, the technical papers were presented. **Yves Alarie** (Laurentian University, Ontario, Canada) noted the basic similarity of the larval setae of Carabidae to Dytiscidae, and used this for a study of Hydroporini. **Margaret Thayer** (Field Museum, Chicago) reviewed the classification of Staphylinidae: there is basic agreement on four monophyletic subfamilies (Omaliinae, Tachyporinae, Oxytelinae and Staphylininae) but not on their relationships. Again, larval chaetotaxy was shown to be significant. **Frank-Thorsten Krell** (Forschungs-institut und Museum Alexander König, Bonn, Germany) gave a curiously one-sided study of deep branching by examination of the fossil record of Scarabaeoidea. The oldest scarab fossils are from the Upper Jurassic and there are scarab-like burrows in Cretaceous dinosaur poo; although not discussed, biogeography says much the same thing. **Clarke Scholtz** (University of Pretoria, South Africa) presented a phylogeny of the Scarabaeinae, based on 50 genera with 250 morphological characters and Aphodiinae as the out-group. The results were completely *contra* expectation, making both coprines and Australasian canthonines polyphyletic. Basal groups were detritivores rather than dung specialists. **Weston Opitz** (Kansas Wesleyan University, Kansas, USA) described the gut of various clerids.

There then followed a series of 5 papers on Phytophaga, entirely appropriate as these are the dominant beetles (maybe I'm biased). **Rolf Oberprieler** (ANIC) described the larva of the enigmatic Australian *Aporhina* and how it fits into the phylogeny of the Brentidae. He noted the problem of larval characters in curculionoids – there aren't many and they tend to be lost. **Willi Kuschel** (New Zealand Arthropod Collection, Auckland) showed that platypodines are specialised scolytines (which are specialised curculionids), using 71 informative adult and larval characters. **Vladimir Zherikhin** (Palaeontological Institute, Moscow, Russia) presented the most contentious and longest talk of the day, on fossil weevils, which was prematurely terminated at the Eocene. Magically, he had brought the critical fossils of many important taxa, never previously taken outside Russia. The most interesting fossils were of the Triassic putative weevil family Obrieniidae. Zherikhin noted that they show some of

the features of Archostemata. **Chris Reid** (Australian Museum) presented results of the incorporation of recent discoveries of larvae of *Aulacoscelis*, *Megascelis* and *Stenomela* into his 1995 analysis of chrysomelid subfamilies. The new data suggest that Spilopyrinae should be elevated to subfamilial rank. **Andrew Calder** (ANIC) presented a phylogeny of Australian strongylurine cerambycids.

After the Phytophaga, **Eric Matthews** discussed the origins of Australian arid-zone tenebrionids, suggesting three sources: Indomalaya (recent), South Gondwana, and the oldest, North Gondwana (the shores of Tethys). **Geoff Monteith** (Queensland Museum) gave some interesting observations on brood ball and larval tunnel formation in some tropical Australian Scarabaeidae. **Kendi Davis** (ANU) talked about the Coleoptera of the Wog Wog experiment set up by **Chris Margules** (CSIRO Wildlife and Ecology): from 1985-1991; 57989 specimens of 669 species were collected in pitfall traps. They were able to show that fragmentation led to loss of predators, rare species and isolated species. **Schalk Louw** (University of the Free State, Bloemfontein, South Africa) discussed the wing-folding structures of elytra and abdomens in the Phytophaga. **Michael Hansen** (Zoological Museum, Copenhagen) redescribed the larva of *Georissus* and showed that this is a typical hydrophilid. Another demonstration of the importance of larval characters was a beautifully illustrated talk by **Joe McHugh** (University of Georgia, Athens, USA) on the fungus beetles (Erotylidae). In these morphology of larvae and pupae is less conservative than that of adults. **Rich Leschen** (Landcare, Auckland) presented convincing phylogenetic evidence for Lawrence's and Crowson's theories that coleopteran predators of Hemiptera are derived from fungus feeders, for example in derodontids, nitidulids, cerylonids and salpingids. **Jim Liebherr** (Cornell University, New York, USA) showed the significance of flightlessness as a precursor to speciation in Hawaiian Carabidae. To cap off an intensive and exciting day, **Mark Lonsdale** (CSIRO Entomology) discussed the significance of beetles, especially Phytophaga it has to be said, as biological control agents of weeds. **Jyrki Muona** noted that one of those used in Australia, a species of *Mogulones*, is a Red Data Book species in Finland!

All through the day, John sat quietly in the audience, listening to the enthusiastic presentations of his colleagues and students, his ears appropriately getting redder and redder. The amassed coleopterists then adjourned for drinks and dinner, during which Ebbe Nielsen highlighted John's career in CSIRO, David Rentz encapsulated John's personal touch to science and its administration, Jyrki Muona summarized the impact of John's research on world coleopterology, and Vladimir Zherikhin conveyed regards and best wishes from Russia's coleopterists to John - and your reviewer remembers very little after that despite the many conversations concerning common and uncommon coleopterological issues.

Chris REID
Australian Museum, Sydney

Dampier 300

Billed as the ultimate biodiversity symposium of the Millenium, and held in Perth 6 – 10 December, this conference was organised by the Australian Systematic Botany Society, the Society of Australian Systematic Biologists, and the Invertebrate Biodiversity and Conservation Group. Almost 200 biologists were attracted, mostly from Western Australia but with a good sample from universities and research stations around this continent. However, *Myrmecia* readers should note that economic entomologists were remarkably absent. It is not clear if economic entomologists consider conservation, let alone systematics, of limited professional interest, or if the organisers had a blind spot when devising the programme. But considering the impact of crop and animal production on the Australian biota and landscape, the deterioration of water supplies, the extensive areas of dead trees due to increasing salinity, defoliation in tree plantations, the large areas of die-back due to foreign fungi, and even the search for indigenous biocontrol agents against exotic pests, this blind spot was surely more of a big blotch. **Andrew Beattie** was one of the few speakers to emphasise human activities, in drawing our attention to the potential ecological threats from that putative entomological equivalent of the rabbit, the humble bumble.

The conference included some outstanding presentations, good and bad. The opening talk was exceptionally interesting, dealing with the first landfall by Europeans on the Australian coast. In developing a new rapid route to the spice islands, by sailing east along the line of Capricorn from the Cape of Good Hope instead of hugging the coast around India, Dutch ships sometimes overshot - and wrecked on Western Australia's inhospitable shore. Three hundred years later their campfire sites could still be located. This talk was a thought provoking introduction to any consideration of the problems that animals and plants face from Australia's climate and soils. Similarly inspirational were – two talks on the relationships

between scale insects and eucalypts, the remarkable diversity of mites within small areas of rainforests, the interesting local endemicity of certain arthropods of low vagility, and the curious life-forms called nanobes.

Many botanical papers were of considerable general interest, with a high proportion emphasising and analysing cladistically the complex patterns of evolution that have produced our floristic diversity. A masterly overview of the diversity amongst the largest Australian genus, the wattles, held the attention of the audience, despite the speaker going long over time. And a student who had spent four months crouched on a stool observing and recording the inter-relationships between various insects and the flowers of trigger plants (albeit supported by a team of volunteers and an extensive family) deserved high praise, as much for determination as for the integrated nature of the studies. Less inspirational was a conservation programme on a beetle whose oviposition behaviour and larval food remain unknown. And I know that pitfall traps produce lots of nice data – but they do not tell us how the trapped organisms spend their lives, nor the contribution the organisms make to ecosystem maintenance. And such traps presumably catch only that segment of a community that is clumsy enough to fall into a hole! Surely Fabre must have turned in his grave.

This matter of trapping came in for particular attention. But surely, when 'sampling' we endeavour to minimise any bias produced by our own or the organisms behaviour, whereas when 'collecting', we try to maximise both those biases in order to catch as many specimens as possible? A taxonomist's sample and an ecologist's sample are essentially different, despite some conservation biologists adopting the colloquial taxonomic use of this word. Even the phrase 'sampling biodiversity' could well conceal a lack statistical rigour.

As might be expected, a considerable number of talks were concerned with the many wonderful things that can be done with computers, from data basing to number crunching. However, the future seemed suddenly brighter when one young colleague pointed out quietly the risk of data coming off the specimens, through a computer programme and into a journal without ever entering a head. Certainly, the prudent choice of characters to be studied, ie. the data collected, is a problem for all scientists, and it was good to have this subject considered so clearly. But the phrase 'taxon sampling' might well be interpreted differently from the way it was used here. Given the wide diversity of taxa in Australia, economic entomologists might well ask "Why sample a major taxon in which the biology of species is not available, when there are so many major taxa with species whose biology impinges on the rest of society?". Perhaps that is why they stayed away from this meeting.

Finally there was a group of talks specifically about *Homo sapiens*. Some States in Australia are developing conservation strategies, and at their best these State strategies are flexible in the way they target the different levels of society through a range of methods. **Max Whitten** pointed out that in South East Asia, children are being actively involved in tree planting programmes, and in understanding that biological control of crop pests helps to protect their environment. It was interesting to learn that these children find it easier to communicate with their grandparents about such issues, than with their parents who have been exposed to a quarter of a century of advertising by chemical companies. Finally, **Hugh Possingham** closed the meetings with the spirited instruction that if we are to communicate conservation and scientific issues to Australian society at large then we must find ways of introducing such subjects into popular culture, including television soap operas and newspaper cartoons. And in that context the opening speaker of the conference had the edge on all of us, because he and his research on the Dutch wrecks at Shark Bay had actually figured in a Japanese newspaper strip cartoon! Now there's a thought Mr President! At forthcoming A.E.S meetings, how about a competition for the best insect/conservation cartoon? Could our Society breed its very own Gary Larson?.....

Laurence MOUND

300 years after Dampier, Waite entomologists Nick Steven, Clair Stephens,
John Jennings, My-my Huynh, and Muhammad Iqbal relax on the Swan River

It's a hard life, this field biology!
Peter Gillespie and Greg Daniels on hard tack in Carnarvon Gorge

REGIONAL NEWS

AUSTRALIAN CAPITAL TERRITORY

Australian National University

John Trueman has now moved into the position of bioinfomatics within the Division of Botany & Zoology and Research School of Biological Sciences. Parts of his current research involve trying to locate endangered dragonflies, and characterising the nuclear receptor for ecdysone in insects - very diverse! Sadly, **Penny Gullan** is leaving the department for the infinitely greener pastures of UC Davis at the end of February. Penny will be sorely missed. **Lyn Cook** and **Hanna Reichel** will continue their Ph.D. work supervised by **David Rowell** in Penny's absence. **Anthony Massaro** is starting Honours work on the effects of secondary plant compounds on sawfly feeding. **Paul Cooper** and **Stuart Dennis** are still trying to figure out the role in feeding of various chemicals within the stomatogastric nervous system.

Australian Plague Locust Commission

Canberra was infested with a plague of locust experts in November when the APLC hosted the first meeting of the Association for Applied Acridology International. Prior to the meetings **Michel Le Coq** (France), **Carlos Lange** (Argentina), **Dave Moore** (England), **Mark Rowland** and **Richard Milner** (CSIRO) spent two weeks at Ardlethan with **David Hunter** and **Ludivina Barrientos-Lozano,** successfully testing *Metarhizium* against locust bands. **Paul Walker** has journeyed to western Queensland to discover the joys of mid-summer locust control: sandflies, mosquitoes and the Windorah pub. **Peter Spurgin** and **Trevor Humphery** are off to Muscat Oman in January for an FAO/NRI locust control course; Peter will then go on to Mauritania for a short consultancy.

CSIRO Entomology

The end of 1999 saw the retirement of **John Lawrence** and all the hype that accompanied this event. In November John's long-awaited CD-ROM "Beetles of the World" was launched, together with a Windows-based update of his earlier "Beetle Larvae of the World". The launch was hosted by the Chief, **Jim Cullen**, and featured tributes from Sir **Robert May**, Chief Science Adviser, UK; The Hon. **Warren Entsch**, Parliamentary Secretary DSIR, and Dr **Paul Wellings**, DCE CSIRO. Both CD-ROMs are available from the ANIC bookstore or CSIRO Publishing. On 2 December a Celebration Symposium was held to honour John's contributions to coleopterology. The symposium as well as the evening dinner were attended by about 60 delegates, including several colleagues and old friends from all over Australia and from overseas. The 23 papers given at the symposium summarised John's career in beetle systematics and presented some latest results in beetle classification and phylogeny (details elsewhere). During the week of the Symposium, numerous visitors worked in the beetle collection, sorting and identifying specimens and discussing their research with colleagues. John has now moved to Gympie in Queensland, where he is busy setting up a new life in a new house. He will continue his beetle research as an ANIC Honorary Research Fellow.

Andrew Calder is busy putting the finishing touches to the Zoological Catalogue of the Byrrhoidea, Scirtoidea and Dascilloidea. His main research these days, however, is a generic overview of the Australian Cerambycinae. In the course of this project he recently visited the Australian and South Australian Museums, to retrieve specimens for a revision of the genus *Piezarthrius* and the tribe Strongylurini. At the Lawrence Symposium he delivered a paper on the phylogeny of the Strongylurini. **Tom Weir** has been hard at work on the other entomological passion in his life, the Microveliidae, together with **Nils Moller Anderson** from Denmark, who visited the ANIC during November and December.

Rolf Oberprieler ran around a lot during the past 3 months trying to ensure smooth running of the Lawrence Symposium. In between, he entertained several weevil colleagues. With **Schalk Louw** of the University of Bloemfontein in South Africa, he embarked on a study of the larvae of phylogenetically critical Australian and African weevil groups. **Vladimir Zherikhin** from the Palaeontological Institute in Moscow, Russia, visited him in Canberra en route from Launceston back home, to jointly examine and discuss weevil fossils and their classification. Vladimir also gave a lavishly illustrated talk on the fossil history of insects in the Division, and had long and heated, but seemingly very fruitful, debates about weevil characters and phylogeny with **Willy Kuschel** from New Zealand. The day after the Lawrence Symposium all the "weevilists" teamed up with some other coleopterists to examine and discuss the fossil Obrieniidae, a group of Triassic beetles described as weevils but, as the consensus went in the end, in reality belonging to the more primitive coleopteran suborder Archostemata. In between all of this, Rolf pursued his current project on weevil phylogeny by studying the larva of *Aporhina*, an enigmatic Australian endemic weevil and, in the weevil scheme of things, a real "phylogenetic heavyweight". In November he

took Schalk, Vladimir and John Lawrence to the coast near Bawley Point to search for the long-amiss larva of the *Aporhina*-buddy *Eurhynchus*; they located adults but not larvae. However a recent follow-up trip in January with **Kim Pullen**, finally yielded a *Eurhynchus* larva, the second time only after Froggatt's original discovery in 1895. Thus, one of Zimmie's "most desired objectives in the study of the Australian weevil fauna" has finally been met. An auspicious start to the New Year!

In November **Ebbe Nielsen** participated in the annual meeting of the Major Systematics Entomology Facilities group (the URL for MSEF is now: www.ento.csiro.au/msef/msef.html). In early 2000 Ebbe served on the Australian delegation to OECD Global Science Forum in Paris and the SBSTTA5 meeting for the Convention on Biological Diversity in Montreal. Ebbe reports steady progress regarding the formation of the Blobal Biodiversity Information Facility (GBIF). In January Ebbe and Peter Cranston attended the III Southern Connection Congress in Lincoln, New Zealand. This meeting had two sessions on southern invertebrate biogeography and systematics. The Council of Australian Museum Directors (CAMD) has appointed Ebbe as the Chair of the CAMD Science Subgroup.

A farewell dinner will be held in Canberra for **Peter Cranston** and **Penny Gullan** on the 25th February. Regrettably, Peter and Penny are departing Australia at the end of February to take up positions at the University of California, Davis.

Theodore Evans has started an ARC/CSIRO funded project on termite foraging and communication behaviour. Termites elicit so much public interest and concern, yet little is known about how wood-eating termites locate potential food sources and then decide whether to exploit them. The organisation of worker behaviours will also be scrutinised, as it is the workers who do the chewing, as well as looking after the reproductives and juvenile castes. **Leigh Miller** attended in November a workshop of the Scientific Advisory Committee reassessing the World Heritage Values of Fraser Island WHA and Caloola National Park. **Michael Lenz** (with **Jim Creffield** of CSIRO Forestry & Forest Products, Melbourne) visited field sites in Thailand investigating different methods for assessing the in-ground and above-ground termite resistance of materials. Responses of termites from Thailand are compared with those at sites in Australia and southern US. The Division said farewell to **Hilda Abbey** after almost 49 years of service to CSIRO. Fortunately Hilda will return to the Termite Group in an honorary capacity after she has taken a well-earned break. **Judith Reinhard**, Post Doc in the Termite Group for 1.5 years has completed her research project on feeding stimulants in termites and has returned to Berlin. Judith Korb, also Post Doc in the Termite Group, moved to Darwin (TERC) to continue her field studies with *Cryptotermes* and other interesting tropical termite matters.

In October **Dave Rentz** and **You Ning Su**, graduate student, Australian National University, headed to Western Australia for a month's fieldwork. The purpose of the trip was to attempt to locate some of the 11 species of Tettigoniidae, described by Dave in recent monographs, that were thought to be environmentally threatened. If they could be found at sites other than their type localities, their status could be reviewed. You Ning's purpose was to find living specimens of the "dwarf field cricket", *Bobilla bivittata*, the type locality of which was "Swan River". The trip was very successful from several standpoints. Several of the threatened species were found and a number of localities and notes on their habitat associations and behaviour recorded. The *Bobilla* was found not only at the type locality but at a number of sites to the north in the vicinity of Leeman, W. A. This extends the known range of the genus to a considerable extent. Dave continues to assemble plates and review the manuscript for Volume 3 of the 'Monograph of Australian Tettigoniidae' which will be submitted soon. Work is already underway on Volume 4 which will include several groups endemic to the wet tropics. Hopefully, future fieldwork will enable sampling of the canopy fauna in the Daintree. In addition, materials are continually being assembled for the 'Guidebook of Australian Locusts and Grasshoppers'. Funding is still being sought but much progress in being made on the descriptive level. Given a bit more time, we may be able to cover approximately half of the known species. **Bob Lewis** and **Murray Upton** are co-authors of the project.

'Heliothinae moths of Australia', book and CD-ROM, by **Marcus Matthews** was published recently. Staff in the ANIC are at the moment proof reading both Ian Common's 'Oecophorine genera of Australia III' and **Michael Braby's** 'Butterflies of Australia'.

The ANIC Technical Training course (contact **Graham Crompton**) and a Nematode Identification course (contact **Mike Hodda**) will be conducted in Canberra soon.

Ian Naumann spent the pre-Christmas weeks of December in the USA. In wintry Lawrence, Kansas Ian met up with expatriate Alice Springs lad, **Dave Vieglais** who is developing the North American Biodiversity Information Network (NABIN). Ian, Dave and the University of Kansas ornithologists talked strategy and tactics for implementing such a

distributed, specimen-based database system in Australia. Ian also spent time with **Charles Michener**, **Steve Ashe** (who has just received ABRS funding to work on Australian staphylinid beetles), scorpionfly specialist **George Byers** and **Alex Slater** (hemipterist who spent several years at the University of Queensland in the late 1970s). Ian then passed through the USDA labs in Washington, D.C. (catching up with hymenopterists **Mike Schauff**, **Dave Smith** and **Eric Grissell**, and aphidologist **Manya Stoezel**) and Raleigh, North Carolina. Raleigh is an increasingly important USDA facility, currently hosting work on exotic pest and disease databases, innovative research on predictive modelling, and the USDA-APHIS incursion management team. There are exciting opportunities for the Raleigh group to work closely with Australia's new National Office of Animal and Plant Health and other Australian research and policy organisations. In Raleigh Ian caught up with **Ron Stinner**, recently barnstorming in Australia in connection with the proposed IPMNet Australia. Ian's crowded itinerary then took him to the Entomological Collections Network Meeting at the University of Georgia, Athens, where there was more discussion of digital databases, diagnostic tools, specimen bar-coding and All-Taxa Inventories. This small gathering of 100 or so entomologists contrasted with the huge American Entomological Society Meeting in the Hyatt Hotel Atlanta. The latter runs to several thousand delegates and commonly a dozen concurrent sessions. Ian divided his time between taxonomy, biological control and invasion biology sessions, and also found time to listen to **Peter Atkinson** and **Craig Coates**, both formerly of CSIRO Entomology's Biotech group and now prospering in the US.

Matt Colloff and **Geir Fokstuen** of the Soil Biodiversity Project have continued their work on functional diversity of soil invertebrates in citrus orchards in the Riverland of South Australia. Due to the mild, wet spring, growers are facing a plague of "Kelly's thrips", especially on lemons and navel oranges. Matt and Geir are prospecting for naturally-occurring predators in soil samples and collecting data on citrus management practices that are associated with the presence of this pest. Jean Devonshire has joined the project to work on the ABRS-funded project on Australian centipedes. Her expertise in field photography and in image processing has proved invaluable.

The bee group has been busy in the last 6 months and it looks as if the next 6 months will prove to be more of the same. **Denis Anderson** has made the bee world and parts of the mite world sit up and take notice. He was an invited speaker at the Apimondea conference in Vancouver, Canada in September where he revealed that the mite that is wreaking havoc in bee hives around the world is not *Varroa jacobsoni*. Denis has proved that it is a totally different species which he has aptly named *V. destructor*. This research has far reaching implications for bee keepers around the world as well as important quarantine implications for Australia, as the Asian honey bee is kept at bay. Knowing which mite is on which bee means the difference between a full scale incursion management plan and a quick mop up, thereby achieving savings on what could be a very large bill. Denis will be travelling to Frankfurt, Germany in January to visit a bee/mite collaborator after accepting an invitation to take part in a thesis defence in Sweden. He'll just be home in time to get ready for a trip to the Tropical Bee Conference in Chang Mai, Thailand in March. On top of all his travels overseas he still has time to travel within Australia doing bee work. He and **Frances FitzGibbon** have released a small number of *Megachile rotundata* on to lucerne fields in the ACT and Deniliquin, NSW as part of the project on the importation and management of these bees. In spite of a low survival/recovery rate of bees released over the last two years, much has been learned and advances are being made towards a successful population in the not too distant future. At the end of 1999 **Stefan Schmidt** went collecting whiteflies and their parasitoids in south west Western Australia. The abundance of whiteflies was locally very high and the trip was very successful. These collecting efforts are part of a joint project with **Paul De Barro** to increase our knowledge of parasitoids of our native whitefly fauna as potential biological control agents. Stefan, **Martin Steinbauer** and **Mark Short** have been conducting taxonomic studies of the nocturnal ichneumonids, a species complex comprising *Netelia*/*Megaceria*/Ophionines, which may act as natural enemies of the "autumn gum moth" (*Mnesampela privata*). In November 1999, **Brian Danforth** (Cornell University) visited Jo Cardale to see the ANIC collection of halictid bees. He was having a most successful field trip, managing to collect fresh specimens of most of the endemic subgenera of *Lasioglossum* in Victoria and NSW.

Penny Greenslade has been able to get back to her Collembola taxonomy thanks to a small grant from ABRS. She is also engaged in some Australian Heritage work on invertebrates in general for Tasmania and Queensland.

Members of the Forest Entomology group have been

especially busy with the commencement of two new projects. **Saul Cunningham** and **Michelle Court** spent part of October surveying insects in and around blue gum plantations in south west WA. In December Saul and **Rob Floyd** travelled around SE Asia (Malaysia, Philippines, Vietnam, Laos, Thailand) working on the "cedar tip moth" (*Hypsipyla robusta*) project. They saw lots of seedlings in the Meliaceae, freshly planted and just waiting to be attacked. They also bought back some material for Marianne Horak, who is working on *Hypsipyla* taxonomy. **Nod Kay** (NZ Forest Research Institute) and **Mamoru Matsuki** will be conducting a host specificity study of "Asian gypsy moth" (*Lymantria dispar*), a potential pest to both Australia and NZ, with native plant species from the two countries at CSIRO Entomology's European laboratories in Montpellier, France in April - June 2000. **Trudi Wharton** commenced PhD studies with the CRC for Sustainable Production Forestry, CSIRO Entomology and the Australian National University. Trudi is studying the biology of the introduced "Californian pine aphid" *Essigella californica*. Arrangements for the Symposium on Insect-Plant Relationships have been on-going since it was publicly announced late in 1999. There has been much interest expressed in the meeting to be held on the 7 & 8th February at the new CSIRO Discovery Centre, Black Mountain. This will be a rare opportunity to meet well known entomologists **Sren Nylin** (Stockholm University) and **Sharon Strauss** (University of California, Davis). A symposium issue of *Austral Ecology* will be published based on papers presented by invited speakers.

Martin J. STEINBAUER
Regional Councillor

NEW SOUTH WALES

Orange Agricultural Institute

Adrian Nicholas, formerly a University of Western Sydney post-graduate student based at Bathurst, was recently appointed as Entomologist at Yanco Agricultural Institute. His research program spans three major crops - citrus, vegetables and stone fruit. The stone fruit work on carpophilus beetles, a serious pest close to harvest of peaches and nectarines, has had him on the road to Gosford, Tumut and Leeton in New South Wales, and to Cobram in Victoria. He's helping **Sandra McDougall** with trials on budworms in vegetable crops. Spined citrus bug will take any spare time he might have after that!

We have also lost **Linda Semeraro** who is now at IHD Knoxfield for 12 months with **Mali Malipatil**. Linda's three-days-per-week from **Graham Thwaite**'s prune project funded by DFRDC is now being used to employ **Tabitha Sole** who was previously with the Weeds CRC group.

The Tri-State End Of Millenium Xiphydriid Excursion to Mount Moffat, Queensland, at the end of November was a major success, with **Peter Gillespie** collecting 2 xiphydriids, thereby augmenting the known material in collections by 5%. The excursion, funded by a grant to **John Jennings** of the Waite, revisited one of the few places in Australia where xiphydriids had been collected in the hope of catching more. It's lucky Peter was there.

Murray Fletcher, Peter Gillespie and **Brad McNeil** spent a day in December collecting leafhoppers between Mount Victoria and Bell in the western Blue Mountains. The target of the day was a new species of Deltocephalinae known only from a single specimen collected by **Fred Muir** in January 1920 from Mount Victoria and now in the Bishop Museum. The excursion was productive from the point of view of leafhoppers generally but unsuccessful in its primary aim. Further trips are planned over the next few weeks.

John Macdonald, in an attempt to wear out the department vehicles in record time, is still doing the weekly circuit from Orange to Camden to Wagga with occasional visits to other fruit fly prone parts of the State.

The search for southern red mite, *Oligonychus ilicis*, during Spring and Summer has not revealed any further infestations. **Danuta Knihinicki** has been sent a number of samples from the Sydney district but none proved to be SRM. These included a number of samples from the originally infested nursery and it would appear that attempts to eradicate the infestation from that nursery have been successful.

Yanco Agricultural Institute

Adrian Nicholas recently moved to Yanco to take up a 12 month HRDC-funded position continuing the work on *Carpophilus* beetle and spined citrus bug that was initiated by **David James** before he moved on to greener pastures (and vineyards) at Washington State University. **Sandra McDougall** is acting Industry Specialist (Vegetables) for the next twelve months, but is still managing to find time to prowl the sweet corn fields of Darlington Point in pursuit of assorted beasties.

Mark Stevens visited **Peter Cranston** at ANIC in December to sort out more chironomid material from establishing rice crops. Chironomids are amongst the most important pests of rice in NSW, and thanks to the keys developed by Peter some meaningful ecological work can finally be done. A reference

collection of local species is currently being developed at Yanco. While in Canberra Mark also caught up with **Geoff Baker, Ray Akhurst** and **Peter Hughes** before returning to Yanco to finalise the program for the rice IPM symposium at the ICE in Brazil.

Stefan Hansen was recently awarded first class honours by Charles Sturt University for his thesis on bioaccumulation of chlorpyrifos by the water snail *Isidorella newcombi*, co-supervised by **Mark Stevens** and **Stuart Helliwell** (CSU). **Ayesha Burdett** (University of Melbourne) is due to complete her honours thesis on non-target effects of rice herbicides in April, and is rapidly forgetting the meaning of the term 'weekend'. **Liesl Schiller** is in the midst of another season investigating mosquito production in rice fields (MScMed co-supervised by Mark and **Richard Russell**). It's currently unclear whether the mosquitoes outnumber the brown snakes or vice versa. **Andrea Wilson** continues to chip away at a mountain of samples from her rice field biodiversity study and is delving into the mysteries of stable isotope analysis in an effort to sort out which bug is eating what.

Richard Faulder has been abducted by the fruit fly program and spends most of his time in a darkened room deciding which fruit flies glow and which don't. Monotonous, but risk-free compared to tip-toeing through the reptiles out in the rice.

University of New England
Agronomy & Soil Science

We welcomed a new arrival, **Dave Britton**, who has started a PhD with **Peter Gregg** working on attract-and-kill technology for *Helicoverpa armigera*. **Peter Gregg** and **Alice Del Socorro** are continuing to work on female *H. armigera* attractants and, in the course of this, made two trips to China - the first in August to conduct attractant field trials with their Chinese colleagues from Shanghai and Hainan Province, and the second, in November to attend the First Asia-Pacific Conference on Chemical Ecology in Shanghai.

Olivia Kvedaras' PhD work on the influence of host plants on the mating behaviour in *H. armigera* is going well and she's looking forward to finishing up early next year. **Tish Silberbauer**'s the only one there at the moment who isn't working directly with *H. armigera*; her work concentrates on the movement of generalist predators in and around cotton fields using insect-borne pollen to trace the movements of lacewings, coccinellids, nabids and melryid beetles.

Dave Britton, just before commencing his PhD studies, spent 3 weeks with **Michael Braby**, chasing lycaenid and pierid butterflies near Wau, Papua New Guinea.

UNE Ecosystem Management

Lisa Lobry de Bruyn, senior lecturer in School of Rural Science and Natural Resources at UNE, and postgraduate research student, **Johnson Nkem**, are involved in evaluating a number of soil health indicators including invertebrates such as ants. They felt there is a need to assess the performance capabilities of soil invertebrates and whether land managers can use them to monitor land condition either to assess soil health or evaluate restoration efforts. The aim of this project is to examine the responses of soil macrofauna against other measures of soil health in cropped sites, under contrasting management regimes, to determine their sensitivity in evaluating the health status of the soil. The project is based in Quirindi, NSW and surrounding areas.

Johnson Nkem has also followed up work that **Lisa Lobry de Bruyn** conducted with **Nilantha Hulugalle** on beneficial invertebrates in cotton-wheat rotations. He had his work presented at the Global Change and Terrestrial Ecosystems Conference in Reading, UK by Dr Hulugalle last year. Another project (funded by Environmental Trust, NSW EPA) **Lisa Lobry de Bruyn** is conducting, and for which she has completed the field work component, is examining local native tree plantings in the New England Tablelands of NSW and gauging their success in terms of soil health within and beyond the revegetated areas. The intention of this project was to gauge the success of these narrow tree belts (usually less than 8 m in width and composed of three tree rows) by examining fluxes in invertebrates (abundance and composition), plant species and soil properties over a three year period. In conjunction it sought to determine if a set of tools could be derived that allowed farmers to monitor the success of their tree plantings, and that would accurately reflect the status of their revegetation efforts.

Much of the work at UNE supervised by **Andrew Boulton** on aquatic invertebrates deals with using community composition as an indicator of stream health, and has included regional tests of the validity of **Bruce Chessman**'s DLWC SIGNAL index developed for streams near Sydney as well as the national river health program and AusRivAs. Although we usually only identify fauna to family level as required by SIGNAL and AusRivAs, there have been some projects where species level data have been collected for caddisflies, mayflies and stoneflies from streams along the northern coast of NSW.

There has also been research into the aquatic invertebrates that live below river beds in the saturated sediments of the 'hyporheic zone'; in the Never Never River for example, over 20 new species have been found from just two sites.

UNE Zoology

Zoology has a couple of new entomology honours students starting, **Michael Ryan** on aquatic insects and **Sydney Jordan** — area to be determined, but definitely insects. In terms of post-graduate students, **Marcel Terry** (co-supervised by **Mary Notestine**) is continuing his work on insect/flower interactions. **Samantha Nagahaulla** submitted her PhD thesis on mite pests of tea in Sri Lanka in relation to integrated pest management and it has been approved - congratulations!

Murray FLETCHER
Regional Councillor

NORTHERN TERRITORY

Northern Australia Quarantine Strategy

Following a week of chasing crazy ants around Nhulunbuy with the NTDPI&F mob, **Glenn Bellis** was visited by **Matthew Purcell** and **John Goolsby** who were scouring the Top End for potential biocontrol agents for *Melaleuca* and *Lygodium*. A lot of to-ing and fro-ing regarding the East Timor situation and its implications for quarantine in NT, resulted in Glenn assisting NTDPI&F with their surveys of the Darwin airport surrounds for exotic pests that may have slipped aboard returning military equipment.

D.P.I. & F. Entomology

Entomology Branch has seen a number of staff changes: **Magen Geyer** resigned to work with CSIRO, and has been replaced (if this is possible) by the unique Cymberline. **Megan Hoskins** took up the new position of Entomology Technician in Katherine after leaving CSIRO. **Stuart Smith** is continuing his passion for fruitflies by spending two months holidaying in India sampling the local cuisine. Hopefully he does not sample too many larvae the wrong way.

The end of the mango season and the onset of the wet season usually sees a quieter time for the Branch, however many staff continue to be heavily involved in the organisation of this years Entomological Conference, which is being held in Darwin for the first time.

With Australia's involvement in East Timor and the regular air and sea movement to and from Darwin, there is a real threat of exotic pests and diseases being introduced. As a result, the Branch undertook a preliminary survey of Darwin looking for exotic species. None was found, and hopefully a follow up survey at the end of the wet season will produce similar results.

Following the discovery of crazy ant, *Anoplolepiis gracilipes* (Smith), at one site on the Gove Peninsula 77 km south west of Nhulunbuy, a survey was organised to map the extent of this infestation. Following assurances that it did not rain to any extent until after Christmas, **Stuart Smith**, **Graham Young** and **Graham Brown**, together with **Glenn Bellis** from NAQS drove to Nhulunbuy at the end of November. Ants were found in 5 separate catchment areas on the peninsula which covers 2,500 square kilometres, and they probably occur wherever permanent water exists. The daily rain made fieldwork more pleasant and probably made the ants more easily detectable. It also rained at night, heavily. The return trip to Darwin was fun and included: 1 broken towbar; 1 broken set of trailer brakes; 1 punctured radiator; 1 blown engine; 3 flooded river crossings (including one crossed 3 times in vane attempts to wash dirt from the windows and roof); and one broken trailer axle (not found until the tow truck driver noticed the wheel pass him and heading towards a group of locals playing cards).

Territory Health Services, Medical Entomology

The Branch is well into the mosquito control program. Salt marsh mosquitoes have been controlled extremely well this season, with a great deal of effort by **Gwenda Hayes** and her merry band of colleagues. The Top end faced a population explosion of *Mansonia* and *Coquillettidia* mosquitoes in January, as a result of the last few years of above average rains which encouraged the reeds where these mosquitoes breed. **Peter Whelan** visited Dili in East Timor in December at the request of WHO. He teamed up with **George Hapgood** of Queensland Health and reported on the dengue and malaria vectors there. He was able to report the existence of a number of Japanese encephalitis vectors in Timor and these have been confirmed by **Richard Russell** at Westmead. Peter has also been advising consultants and Lands authorities on a large proposed lake in a mangrove arm of Darwin harbour.

Peter Whelan was recognised in the Australia Day Honours List with an AM - a Member in the General Division of the Order of Australia.

Andrea Wilson conducted an investigation of a large proposed prawn farm on coastal tidal flats near Darwin in December and presented a report to the

developers. She is now looking forward to the results of their Environmental Impact Statement. **Gwenda Hayes** returned to her myriad range of duties in November and is busy organising the data base, in between organising all the vector control operations. Gwenda, together with **Jane Carter**, **Bernadette Haigh**, **Nathan Barrett** and **Brian Baker** have shifted their control efforts over to the fresh water species, and are still keeping an eye on the straggle of salt marsh habitats that have still not finished their contribution. **Martin Shivas** has concluded initial investigations of biting midges in Palmerston and he and Peter have organised next years experimental program with the Lands Department. Martin has submitted his PHD and is awaiting the official word.

Martin SHIVAS
Regional Councillor

QUEENSLAND – NORTH

QDPI, Mareeba

Siva Subramanian has been appointed as the entomologist at Bowen Research Station. Siva was working for the Dept. of Natural Resources and Environment in Bairnsdale, Victoria. He has a PhD in entomology from Lincoln University, NZ and a MSc and BSc obtained in Sri Lanka and India. **Jacqueline Nolen** of Watsonville, is undertaking a short study of the invertebrate fauna of an interesting wetland area near Julatten in the Mareeba Shire. Jacqueline worked previously in **Richard Pearson's** wet tropics aquatic study group. **Dan Smith** from DPI Nambour visited Mareeba briefly to give talks on the current entomological issues in the citrus industry in Queensland.

Kazuyuki Endo, an amateur entomologist from Japan visited Australia early in December. Kazuyuki is especially interested in Australian dynastine scarabaeid beetles, specimens of which **Ross Storey** kindly handed over, in return for some nice Japanese (you guessed it!) dung beetles! In December, **Patrick Huber** handed in his PhD thesis two hours before his family arrived from Brisbane to attend his wedding, which went off without a hitch three days later. Phew! **Alan Sundholm** visited north Queensland early in January. Alan was mainly in pursuit of Buprestidae. **Mauro Daccordi** from Turin, Italy also visited in January. Mauro visited **Ross Storey** and **Bruno Pinese,** and did some collecting of Chrysomelidae in the area, under a shroud of rain clouds. **Russell Parker**, **Shaun Hood** and **Geoff Waite** visited Mareeba in January to chat with **Harry Fay** about their fruitspotting bug on avocado project. Parts of this long term project are reaching completion and nearing publication.

Chris Darling, a hymenopterist from Canada visited in January/February. Chris specialises in the chalcidoid family Perilampidae and plans on doing some field collections of the group while in Australia. **Barry Moore** is spending 7 weeks in the Julatten area. Barry will be spending some time working on his list of beetles found in the rainforests near his house. **Jack** and **Sue Hasenpusch** have finally opened their Rainforest Museum in Kuranda. The museum has on display pinned examples of some of the more spectacular insects found in north Queensland and live examples of others, including stick insec. Information on F.P. Dodd, 'The Butterfly Man of Kuranda' is also featured.

QDPI – Postharvest Disinfestation

The QDPI postharvest disinfestation team, led by Cairns-based senior entomologist **Bob Corcoran**, has won the export support category in the annual Premier of Queensland's Awards for Export Achievement, presented by Premier Peter Beattie in Brisbane last October. The team was among ten award winners and the only government group to win an award, which acknowledges their success in gaining greater access for the state's fresh fruit and vegetables on overseas markets.

JCU - Townsville

Simon Robson has been appointed lecturer in Department of Zoology and Tropical Ecology. Simon is into social insects, and his current research includes looking into the evolution and organization of communal nest construction in the weaver ant genus *Polyrhachis*, the organization of colony search in subterranean termites, foraging dynamics in the Formicidae and social context and behavioral polyethism in the social insects. **Wildan Jadmiko** has commenced PhD studies on the use of chrysopids in controlling pests on soy bean.

JCU – Cairns

We say a fond farewell to self confessed bug-girl **Kirsti Abbott,** who has been awarded an ARC-SPIRT PhD scholarship through Monash Uni and Parks Australia to study the invasion biology of the yellow crazy ant on Christmas Island (where it is giving the red land crabs a hiding). Keep in touch Kirsti!

QIMR

Michael Brown is going to the American Mosquito Control Association conference in Atlantic City in March, and presenting a paper on the evaluation of s-methoprene based formulations for control of mosquitoes in Australia and New Zealand. **Peter**

Ryan was awarded his doctorate in December last year for his thesis on the ecology and control of arbovirus disease in south east Queensland. Peter has secured a post-doctoral position in the Mosquito Control Laboratory, primarily working on *Aedes aegypti* control in north Queensland and Vietnam, with **Brian Kay**. Both Brian and Peter are going to Vietnam in March to help implement Phase II of the Community Programs in Dengue Control. Based on the success of the Phase I control project funded by AusAID which reduced dengue incidence in northern areas of Vietnam by 87-100%, the Phase II project will target seven additional communes throughout northern and central Vietnam. Unfortunately, **Tonya Watson** left the Mosquito Control Laboratory over the Christmas break and will be moving to Sydney in the near future.

Kylie ANDERSON
Regional Councillor

QUEENSLAND - SOUTH

Alan Fletcher Research Station

Michael Day has been releasing the beetle, *Alagoasa parana* on lantana in south-east Qld and northern NSW in the latest effort to control the weed. The stem sucking bug *Aconophora compressa*, which is being released throughout Qld and NSW, has established at a number of sites and plants are beginning to show signs of damage. Michael will be travelling through NSW with **Royce Holtkamp** inspecting *A. compressa* release sites and conducting insect surveys on the weed.

Michael Denning has joined the lantana group replacing **Peter Jones** who resigned to follow his wife **Kylie Galway** to Christchurch to pursue a PhD. **Chris Wylie** has also joined the lantana group as a summer scholarship student funded by ACIAR to assist in the preparation of a review on the biological control of lantana as part of a collaboratory project with Myron Zalucki (UQ) and Julia Playford (QNPWS).

QDPI

Graham White (DPI Toowoomba) has begun a new GRDC funded project to improve the safety of phosphine fumigation in the grains industry. Agriculture departments in each state will facilitate industry participation in planning and implementing the project.

Rod Elder (DPI Rockhampton) has written 120 DPI notes, in conjunction with DPI, BSES and APLC Entomologists and others, on the pests of tropical tree crops and pastures. They are being made available on the DPI Prime Notes cd-rom, also at the DPI web site: http://www.dpi.qld.gov.au/dpinotes/Welcome.html. Each note covers the management and description of one pest and is designed to provide all the information required for a grower or contractor to undertake IPM based control of the pest. The 2 to 5 page notes have coloured pictures of the pest and/or its damage. Headings include pest and damage description, distribution, host range, importance, action levels, biological, cultural and chemical control and further information. Rod who is semi retired and works 2 days per week on the notes and papers, sees the notes as a way of keeping his brain functioning and a way of getting the information generated by entomologists to the front line. He has also made a start on notes for field crop pests.

Gordon Simpson's cotton mirid team (DPI Toowoomba) expanded to 6 this year with 3 casuals along with the regulars **David Murray** and **Richard Lloyd**. **Danielle Swan**, **Allan Whitby** and **Ginevre Marlow** came on board with their previous cotton and computer experience a big asset for the project. A lack of mirids forced plans to be re-thought, with sampling for beneficial arthropods in cotton seen as one major shortfall with the planned IPM program being evaluated for mirid control. A number of groups can now have sampling plans developed for them.

John Rogers, **Andrew Ward** and **Dave Holdom** from the ACIAR whitegrub project team are continuing to keep busy investigating peanut white grubs in the south Burnett, and in India. Andrew Ward returned from India in October after a research trip lasting four and half months, examining the behaviour and ecology of Southern Indian whitegrubs. Dave Holdom spent two weeks in Northern India assisting the Northern Indian team with their *Metarhizium* research in September. John Rogers has just left for a two week trip to review the 1999 Indian project. The team is currently preparing for the arrival of an Indian project team scientist, **Dr V. Anitha** (ICRISAT) who will be visiting Brisbane and Kingaroy throughout February.

Amanda Cleary recently commenced working with **Brad Scholz** (DPI Toowoomba) on IPM in dryland cotton. It has been a slow pest season to date. Brad and Amanda are evaluating lablab as a summer trap crop for heliothis and nursery crop for beneficial invertebrates in dryland cotton at Jimbour on the Darling Downs.

Dr. Mofakhar Hossain,Entomologist at the Institute of Sustainable Irrigated Agriculture, Tatura, Victoria, visited **Frank Page** at Applethorpe Research Station during December to advise on methods of monitoring for *Carpophilus spp.* beetles in stonefruit. Previous monitoring using traps baited with pheromones and apple juice had shown that

C.davidsoni was the predominant species at Stanthorpe. Some species can cause severe losses in stonefruit crops in the district. It is hoped that new, integrated methods of control of these beetles will be trialed next season, if Dr. Hossain's trials are successful at Tatura.

The fruitspotting bug team from DPI Maroochy, **Geoff Waite**, **Shaun Hood** and **Russell Parker** visited **Harry Fay**, **Stef DeFaveri** and **Bruno Penisi** at Mareeba in early January to discuss fruitspotting bugs and potential avocado projects, especially in relation to management of the avocado fruit borer. Shaun Hood has been working with Geoff Waite on the fruitspotting bug project at Maroochy Research Station for just over two years. However, with the end of the project looming Shaun has been applying for alternative jobs. He has been appointed as an R&D officer for Bayer and will take up his appointment in the Margaret River area of WA in February - another blow for those in management who think research can be successfully completed utilising temporary staff! The FSB team will be further dismantled in February when Russell Parker moves out of entomology and into the IT sector of the Queensland Horticulture Institute to work on the Macman project.

Geoff Waite was invited to speak at the First International Macadamia Symposium in Africa, which was held in Nelspruit in September 1999. The post-conference tour was well-received by all, featuring a tour through Kruger Park and a weekend in Tshukudu Private Game Reserve. Home for a week, Geoff then headed in the opposite direction to Mexico for the 4th World Avocado Conference in Uruapan where he presented a paper. The Mexican hospitality and conference social activities ensured everyone returned home very tired.

Dan Smith (DPI Maroochy) travelled to Chile in November to attend a workshop for the promotion of IPM in citrus in that country.

Army Malaria Institute

In early December, **Steve Frances** attended the Annual meeting of the Entomological Society of America in Atlanta, Georgia, and presented a paper in a symposium entitled "Insect Repellents: Past, Present and Future". While in Atlanta, Steve visited the Centers for Disease Control, Chamblee Campus, and discussed insecticide susceptibility testing with **Bill Brogdon** and **Bob Wirtz**, and mosquito and malaria transmission studies with **Bill Collins**.

Bruce Russell returned to Brisbane in early January after completing 7 weeks as part of the Interfet Force in East Timor. In January, **Bob Cooper** visited Sydney and had discussions with **Nigel Beebe**, University of Technology, Sydney and **Tony Sweeney** on the genetics and distribution of the members of the *Anopheles punctulatus* group.

SOUTH AUSTRALIA

SARDI Entomology

Angela Lush and **Greg Baker** gave presentations at two pest management workshops on citrus in Mildura and Loxton in mid November. Angela presented information on snails and Greg covered light brown apple moth, mealybugs and thrips.

Some staff arrangements have changed within the Unit. **Nathan Luke**, Technical Officer, has transferred from a biological control project on weeds (cutleaf mignonette) to join **Suzanne Charwat** on the broad-acre snail project, and **Kerrin Bell** has slotted into Nathan's old position for the last six months of the contract.

Peter Taverner has been beavering away furiously with his research throughout 1999 and his efforts have paid off. He submitted his PhD thesis entitled "The effects of post-harvest oils on arthropod pests of citrus" in late December (on time) which allowed him to relax over Xmas. Well done Peter!!

Gabriella Caon and **Ken Henry** have been kept well occupied with western flower thrips in recent months. They have conducted two workshops on identification; one for strawberry growers and the other for the nursery industry in conjunction with **Anne Frodsham**, SA's Industry Development Officer.

Jianhua Mo has been busy developing a rate of development model for diamondback moth. This has now been completed and it is hoped it will be used by brassica growers as part of their IPM program for this pest. The model is available on the SARDI website.

The European wasp season is upon us again and **Glenys Wood** is again testing various baiting procedures. After some interesting escapades, Glenys has managed to successfully transfer wasp nests into portable nest boxes which opens up the way for some "very different" experiments.

The campaign to control an outbreak of the small plague grasshopper has been successfully completed and this will hopefully allow **Dennis Hopkins** and **Ken Henry** to get back to their "normal duties". During the period September to November, an aerial spraying program against this grasshopper prevented major crop and pasture losses.

The University of Adelaide
Dept of Applied & Molecular Ecology
Greg Daniels (Queensland University), **Peter Gillespie** (Agriculture NSW, Orange), and **John Jennings** had a very productive field trip to the Mount Moffatt section of Carnarvon Gorge National Park Queensland in the last week of November 1999. Greg collected a large number of robber flies, including many new records, Peter collected numerous white flies and thrips, and John collected a wide range of Hymenoptera. **Murray Fletcher** didn't miss out as many leafhoppers were also collected!
Staff and students were well represented at the Dampier 300 conference held in Perth 5-10 December 1999. Papers were presented by **Andy Austin**, **John Jennings**, **Graham Lewis** (now a PhD student in the Department of Zoology, Melbourne University), and **Hugh Possingham**. Posters were presented by **Jason Cody**, **Travis Gotch**, **My-my Huynh** (now with **Greg Baker** at SARDI Entomology), **Claire Stephens**, **Nick Stevens**, and **Gary Taylor**. **Muhammad Iqbal** (post-doc with **Andy Austin**) spent several days prior to the conference working with **Mark Harvey** in the Western Australian Museum. At the end of the conference, Andy Austin flew off to Atlanta Georgia to attend the 1999 Annual General Meeting of the Entomological Society of America.
John Jennings was recently awarded a PhD for his thesis entitled "Systematics and biogeography of Hyptiogastrine wasps (Hymenoptera: Evanioidea).
Two hard working students with Rick Roush at the Waite have finished their PhD research and moved immediately into jobs. **Mahmood Ahmad** filed his PhD thesis on the frequencies of Bt resistance genes in diamondback moth and the cotton bollowOrm *Helicoverpa armigera*, and has returned to Pakistan, where he has been assigned to work on honey bees. **Craig Clarke** has left a draft of his thesis on climatic matching in biological control and has moved to Albury for a position with Novartis.

Australian Water Quality Centre,
Macroinvertebrate Group
The Monitoring River Health group (**Chris Madden**, **Paul McEvoy**, **Daria Schulze**, **Vladimir Tsymbal** and **Tracy Venus**) have finished field work for the foreseeable future. The last field trip was a memorable one to the Coober Pedy and Oodnadatta Track area in mid-December. There were thunderstorms about but we chose a good window as the track had been closed four days before we left and it rained the day we came back and closed the track again. The patchy nature of the rain was obvious as a couple of waterholes had dried up since we visited in June but others had filled up with recent downpours. Claypan puddles had plenty of shield shrimps (Notostraca) and Conchostraca. The beers enjoyed in the "spa" while camped at the Coward Springs bore were also very memorable. The project draws to a close at the end of 2001 and most of this year will be spent processing samples collected from the waterways of South Australia in the past two years. Hopefully, the project will continue in some form after this year and build on the enormous resource of data that has been accumulated since 1994. We hope to produce distribution maps of species for SA. New records are turning up all the time as we widen our area of collection and increase our taxonomic knowledge, especially in the oligochaete worms and aquatic mites. **Paul McEvoy** will be attending a workshop for **MRH** in Canberra in early February and then travelling on to Albury for the aquatic creature Taxonomic Workshop.
Peter Schultz and **Sam Wade** continue with macroinvertebrate sampling of the Onkaparinga Water Catchment, as well as long-term projects monitoring Lake Bonney in the south-east, also the Murray River for the Murray-Darling Basin Commission. Reports are currently being edited on monitoring of discharges from Waste water Treatment Plants in Millicent and Naracoorte. A new project starts this year looking at the new suburb of Mawson Lakes where waste water is to be recycled via a wetland system for residents to use on their gardens.

John JENNINGS
Regional Councillor

TASMANIA

University of Tasmania
School of Agricultural Science/CRC for Sustainable Production Forestry
Marina Hurley, Steve Patterson and **Vin Patel** have been conducting a detailed feeding trial in the field comparing *Chrysophtharta agricola* and *C. bimaculata* consumption and survival on juvenile and adult *E. nitens* foliage. Furthermore, **Marina Hurley** and **Peter McQuillan** have an ARC SPIRT scholarship available for a PhD student to study soil dwelling scarabs in newly established *E. nitens* plantations. Anyone interested please refer to the advertisement at the back of this newsletter or to the AES web page. **Geoff Allen** continues research on several fronts including field mortality and development of *C. agricola* and *Uraba lugens*. He has also started research in collaboration with **Paul Schmid-Hempel** (ETH,

Zurich) and **Roger Buttermore** (TMAG) on the genetic diversity, parasites and pathogens of the bumblebee in Tasmania -recently appointing **Owen Seeman** to this research. **John Alcock** (Arizona State University) also made a brief visit to the university. Sheep blowfly has also resurfaced as a research interest at the University with two undergraduate students undertaking summer projects on fly trapping. PhD students **Anthony Rice** (tachinids) and **Helen Nahrung** (leaf beetles) and **Marie Yee** (saproxylic insect biodiversity) are busy with their summer field research. **Brendan Murphy** (Uni Canterbury, NZ) has also returned this summer to Hobart to continue his PhD studies on leaf beetle egg parasitoids. Meanwhile, both **Steve Candy** (FT) and **Tara Simmul** anticipate soon finishing their PhD theses.

School of Geography and Environmental Studies
Peter McQuillan spent 2 weeks or so in Western Australia, where he attended the biodiversity conference, met up with WA entomologists and undertook some successful moth collecting around the south-west. Peter is now (thinking about) preparing for another big teaching semester!

Tasmanian Institute of Agricultural Research (TIAR)
John Ireson remains busy with various weed biocontrol projects, especially of gorse. **Karina Potter's** field trials on the efficacy of ragwort flea beetle met with mixed success, the major hindrance being an inability to predict/control rainfall (we all have that problem!) and where any rain will eventually settle in a paddock (if only it would read the experimental design!). However, undeterred plans for further trials are being hatched at this very moment toward her PhD.

Tasmanian Museum and Art Gallery (TMAG)
Roger Buttermore and Kaye Hergstrom have had their hands more than full over the last few months. They hosted a national 2-day workshop on bumblebees in November attended by over 20 national and several international delegates. Since then they have started a major statewide survey of bumblebee distribution and have begun work on the pollinator visitation at pre-selected sites around Hobart. As a direct result bumblebees, Kaye and Roger have had several state and national media appearances, reported with varying degrees of accuracy.

Department of Primary Industries, Water and the Environment
Margaret Williams has been occupied with a fumigation experiment comparing the mortality of codling moth eggs on Jonagold apples to that of eggs laid on Fuji apples amongst her usual quarantine duties. In mid December she commenced a period of Acting Manager for Diagnostic Services Branch. This branch has only two entomologists. The rest of the staff are plant and animal (including fish) pathologists, microbiologists, virologists and parasitologists with associated technical staff; so some steep learning curves are being encountered. **Trevor Semmens** and **Lionel Hill** attended the TMAG bumblebee workshop. Two delegates from this workshop, **Jane Stout** and **Dave Goulson** (from the University of Southampton), subsequently visited the collection to identify insects they had caught in their bumblebee studies. Another visitor to the collection was **Darcy Tordoff** from the Royal Botanical Gardens in Sydney, looking at Coleoptera. The end of the year also saw **Paul Rapley** (Apple IPM) retire whilst **Trevor Semmens**, curator of the collection, is planning to retire in mid February. Trevor is concerned for the long term management and survival of the Department's collection.
Lionel Hill continues in a broad role at Devonport addressing diverse enquiries along with pesticide registrations. Lionel still has three Western Flower Thrips sites under quarantine management. He is employing **Jean Bentley** via Agronico to extend scouting techniques to fresh market corn growers under HRDC funding. He and IPM agronomist **Julia French** are increasing the attention they give to the diverse brassica industries as part of the HRDC *Plutella* project. He and Julia have been appointed part-time to a new organics unit in DPIWE. In between times Lionel is developing the pest record and state checklist database and is uncertain about future data entry when Trevor Semmens retires in February. Lionel hopes to move the database from Access to BioLink to improve wide area network capability and also to join the proposed internetwork of agricultural entomology databases.

Forestry Tasmania (FT)
In November **Dick Bashford** attended the *Essigella* workshop in Melbourne and in December attended the CHAEC meeting in Perth and visited the WA Agriculture Insect Collection. He conducted a day field workshop on insect control options for *Eucalyptus globulus* pests in the Manjimup area for the WA Pest Management Group and visited several plantation sites with **Andrew Loch**. Dick is

currently monitoring for leaf beetles and *Mnesampela* in plantations as well as Asian Gypsy Moth in five port areas. **Jane Elek** has been very busy with research trials and also with operational monitoring/control of leaf beetles. **Ross Wylie** (QFRI), **Rob Floyd** (CSIRO) and **Humphrey Elliott** (FT) visited Fiji, Vanuatu and Tonga in late January to discuss a possible ACIAR/AusAID project on health surveillance with local forest managers/ entomologists/administrators.

North Eucalypt Technologies (NET)
David de Little reports that North Forest Products has been undertaking Forest Health Surveillance in its eucalypt plantations for the past 2 years. Several insect outbreaks and potential outbreaks have been detected as a result. The most recent was an outbreak of Autumn Gum Moth (*Mnesampela privata*) in 360 ha of 18 month old *E. globulus* at Woolnorth. Aerial spraying with Cypermethrin was effective. **Tara Simmul** (CRC- SPF) has been surveying newly established eucalypt plantations in Tasmania for scarab beetle establishment, the main pest species belonging to the large genus *Heteronyx*.

Queen Victoria Museum, Launceston (QVM)
Very significant developments have been taking place at the QVM over the past couple of years, but only now are they impacting significantly upon natural sciences. The catalyst was the decision by Launceston City Council to combine forces with the Launceston Show Society and the University of Tasmania to redevelop the historical Inveresk railway workshops precinct and to recycle many of the original buildings in preparation for a second life. Several museum departments and functions are now re-housed in purpose-built spaces at the site and others, including the Art Gallery will also vacate the Wellington Street building over the next two years.
For Zoology the end point of all this change is that it will now have a dedicated entomological work area adjacent to the pinned collection. A new storage area has also been acquired and equipped with compactor shelving to accommodate the alcohol-preserved invertebrate collections. **Brian Smith** is in the running for the 1999 'basket-case of the year' award, after he ordered 1002 plastic baskets, to be placed 3 to a shelf (3 into 1000 won't go!) to help keep jars in meaningful cohorts. Although this represents a vast improvement in the volume of space available, the quality of the space is not ideal either for specimens or for curatorial staff and the arrangement is thus a temporary one pending construction of stage 1 of a purpose-built spirit store later this year.
Active up-grading of components of the collections is well under way with **Tim Kingston, Brian Smith** and **Bob Mesibov** continuing to take curatorial responsibility for QVM's peerless collections of Tasmanian molluscs, multipedes (velvet worms, millipedes and centipedes obviously!) and earthworms. Arachnologist **Lisa Boutin** has been contracted for a further period from January to continue her upgrade of the spider collection. The quantity and quality of work space available to accommodate the faithful volunteers (those truly at the curation coalface) is also improving. Volunteers are continuing to re-house for long-term preservation the very extensive collections of aquatic invertebrates passed to the QVM by the Inland Fisheries Commission. Once this task is completed these specimens will complement very nicely the MRHI collections and provide excellent fodder for taxonomists working on any of these groups.

Geoff R. ALLEN
Tasmanian Regional Councillor

VICTORIA

Institute for Horticultural Development, Knoxfield
Peter Ridland has been busy monitoring sweet corn after a large flight of *Helicoverpa armigera* swept into Victoria in the third week of November. Last season, moth numbers at this time of year at Dalmore (50 km SE of Melbourne) averaged 1.5 moths per Scentry® pheromone trap per night, but this season the average was 40 moths. Numbers have been remarkably similar at Bairnsdale (270 km SE of Melbourne). Growers in both districts and in Robinvale (400 km NW of Melbourne) reported very high numbers of larvae and subsequent cob damage in early season sweet corn crops. There was also a report from Warrnambool, where synthetic pyrethroid insecticides have failed to control *Helicoverpa* larvae in a crop of beans, suggesting that the flight reached this district as well.
Nancy Endersby and **Peter Ridland** have been training this season's *Brassica* crop scouts for E. E. Muir & Sons in Werribee and Cranbourne on behalf of the National Diamondback Moth Project. The scouts monitor a variety of *Brassica* vegetable crops from cauliflower to turnips. This year, they are also branching out to look at lettuce as growers are having problems with *Helicoverpa* larvae. Nancy and Peter also visited Warrnambool to have a look at the diamondback moth in forage brassicas. **Sean Kenny** from DNRE Warrnambool showed them 5 properties which are part of a huge turnip agronomy project. They were excited at the level of biological control

in some of these crops, but worried by the increasing use of synthetic pyrethroids which is clearly disrupting the parasitoids at other sites.

Stewart Learmonth (Agriculture Western Australia, Manjimup) visited Melbourne in January. He caught up on news of *Helicoverpa* in sweet corn and diamondback moth, discussed grapevine mites with Martina Bernard and visited Paul Horne at IPM Technologies. **David Williams** has relocated to ISIA Tatura. His new position is Principal Scientist, Industry Development for Perennial Horticulture. This has statewide responsibilities so he may not be in the office all that much (what's new about that!). New contact details are phone 03 5833-5266, fax 03 5833-5337. Email and mobile remain the same. David hosted a visit by a contingent of Korean scientists in early December. The group included a plant pathologist, entomologist and 3 extension staff. They spent time in S.Australia with **Paul James** before touring Victorian apple growing regions with David. The group was particularly interested in how we do IPM research and extension in Australia. David will be travelling to Korea in February to have further discussions and present a paper on Integrated Fruit Production.

Martina Bernard presented a poster on her grapevine rust mite work at the International Viticulture Cool Climate Symposium in Melbourne. Many growers were interested in the information that 'cold damage' is actually caused by grapevine rust mites. She showed that a sulphur and canola oil spray at the woolly bud stage can significantly reduce damage.

An Integrated Vine Management workshop was facilitated by **DeAnn Glenn** in conjunction with the International Cool Climate Symposium. Dr **Carmo Vasconceles** from Oregon State University, Dr **Wayne Wilcox** from Cornell University and **Kevin Ker** from Brock University in Ontario presented information on IPM in the USA, Canada and Switzerland, including strategies to manage the vineyard habitat to enhance natural predators and parasites.

Institute of Sustainable Irrigated Agriculture, Tatura

ISIA has a new director, Dr. **Malcolm Campbell**, who is an entomologist from Northwest Victoria. The Entomology team at ISIA has been joined by **David Willliams** who will be based in Tatura. Dr **Andrea Drago** of Padua University, Italy has joined Dr **Alex Ilichev** to work on the mating disruption project again this summer. We also had a visit from a Korean Research delegation, which included Dr. **Dong-Soon Kim** who drew some interesting contrasts between our two agricultural systems.

At the end of January the Entomology team was lucky to host a visit from **Graham Thwaite** and **Adrian Nicolas** of NSW Agriculture. We discussed the *Carpophilus* Beetle project and a wide range of Entomology related topics.

La Trobe University

Our ARC Special Research Centre (CESAR – Centre for Environmental Stress and Adaptation Research) has started operations with relatively long term funding provided by the Australian Research Council and other sources. CESAR is spread across La Trobe, Melbourne and Monash Universities, and its brief is to use model insect systems to understand the main issues and mechanisms involved with adaptation of organisms to stress, and to disseminate this information to industry and the community. **Ary Hoffmann** (La Trobe) heads the SRC. **Phil Batterham** from Melbourne is Deputy Director and other participants include **Steve McKechnie** (Monash), **Dave Heckel** (Melbourne), **John McKenzie** (Melbourne) and **Richard Woods** (La Trobe). CESAR will use the latest technology from both molecular and organismal biology directing efforts towards answering the following questions:

How important is environmental stress as a cause of evolutionary change? What types of genes and genetic changes are involved? Which factors enhance the likelihood of populations adapting to stressful environments? Does stress increase variability and can this be used to monitor the impact of pollution? CESAR will address these questions using *Drosophila*, *Lucilia*, *Trichogramma*, *Helicoverpa*, chironomids and others. CESAR will provide the community with:

1. Strategies to retard the evolution of pesticide resistance and thus to extend the useful life of pesticides. This will keep production costs down, minimize toxic chemicals in our environment and help sustain agricultural yields.
2. A method for the early and unambiguous detection of environmental toxins and pollutants. We will develop the techniques for bio-monitoring sub-lethal effects of toxins that are likely to have major biological consequences.
3. An overall understanding of stress adaptation and its limitations, and of the underlying genetic and physiological mechanisms of stress resistance. We will promote public awareness of issues that need to be addressed if we are to conserve threatened species, sustain agricultural yields and cope with the impact of global warming.

To tackle these issues, a dynamic interactive group

of postgraduate students, postdocs and other research personnel is being established. Anyone interested in obtaining more information about this initiative should contact the Director (Prof. Ary Hoffmann genaah@gen.latrobe.edu.au) or Executive Officer (Dr Richard Woods R.Woods@latrobe.edu.au).

IPM Technologies

Paul Horne travelled with **James Altmann**, **Dan Papacek**, **Andy Ryland** and **Robin Coy** to visit **John Thomson**, the newest member of the Australasian Biological Control association, in Auckland recently. All were impressed with the insect rearing facilities. Regular insect monitoring in a range of crops is getting extremely popular again, keeping **Paul Horne** and **Cindy Edward** very busy. A project on IPM in table grapes at Robinvale has added to the workload, but is progressing well. The interest by farmers in using true IPM is encouraging. Dr. **John Curtis** who is currently doing post doctoral work on thrips in cabbages at Cornell University spent a day monitoring a range of crops with Paul and Cindy.

Monash University

Kyla Finlay is in the final stages of her PhD (she hopes!) working on the taxonomy of south east Australian Ephemeroptera (mayflies). Over the past three years she has visited and collected from over 300 sites through out Victoria, southern New South Wales and Tasmania. These collections have led to the discovery of many new species which will constitute a large part of her PhD - one new species has just been accepted for publication in the Australian Journal of Entomology. In November she visited New Zealand for the joint Australian Society of Limnology and New Zealand Limnological Society Meeting in Auckland NZ and presented some of her biogeographical findings on her new species. Kyla has just started working for the natural resources and environment at the Institute of Horticultural Development in Knoxfield as an entomologist cataloguing the insect pests of horticultural produce in Victoria. After hours are devoted to writing, writing and more writing to finish that PhD. **Fiona Clissold** is waiting for the completion of new constant temperature rooms so that she can commence her final experiments trying to elucidate which factor(s) are affecting the digestibility and utilization of two grasses by the Australian Plague Locust.

The Monash facility of CESAR, a new ARC Special Research Centre or Environmental Stress and Adaptation Research, is now established in the Department of Biological Sciences, with two new staff members commencing in January, Dr **Liza Miller** and Ms **Alisha Anderson**. **Steve McKechnie** at Monash, and **Ary Hoffmann** the Director of the Centre based at La Trobe, will focus largely on the Climatic Stress Program of CESAR. Our aim is to better understand the adaptation of insects to various climatic stresses, such as temperature and humidity extremes, and we will first research several *Drosophila* species. A main task for Liza will be to investigate the marked differences in stress resistance that occur between the Australian pair of sibling species *D. serrata* and *D. birchii*. Alisha will be heavily involved in a large field-cage experiment where tropical populations will be translocated to a cool-temperate region and vice-versa. We aim to pin-point key climatic variables that mould local stress-resistance and life-history characteristics, and to track some of the genetic markers that distinguish populations from the different climates. We also will be applying a mutagenic approach to find genes and underlying physiological mechanisms that confer resistance to several of the stresses that are imposed by different climates.

DeAnn GLENN
Regional Councillor

ENTOMOLOGICAL SOCIETY OF VICTORIA INC.

During 1999 members enjoyed talks on Apiculture, the Melbourne Zoological Gardens Butterfly House, and Butterfly Research in the Ballarat region. As usual, Prof. **Allan Kellehear** gave a thought-provoking presidential address, this year accompanied by music and entitled "In the Mood - the musical portrayal of insects". In October members visited the collection of CSIRO Forestry and Forests Products Division, hosted by Dr. **Laurie Cookson** and **Jim Creffield**.

Six issues of the *Victorian Entomologist* were produced containing 21 articles, minutes of meetings, and compilations of articles of entomological interest. Dr **Tim New** and **Peter Carwardine** were elected to Honorary Life Membership for their many years of service to the Society and the Le Souëf Award, for outstanding amateur contributions to entomology, was awarded to Hugh Bollam, of Western Australia.

The Society was pleased to continue its annual funding of two bursaries for the Science Talent Quest organised by the Science Teachers Association of Victoria. Winners were **Rachel Loughnan** with an essay about "Rachel's Caterpillar" and **Stef Capogreco** & **Anne Flaherty** with their "Ladybird Game".

Membership remains constant at just over 100 and new members are always welcome.

Ian ENDERSBY

WESTERN AUSTRALIA

CSIRO Centre for Mediterranean Agricultural Research

John Matthiessen headed the organising committee of the 7th Australasian Conference on Grassland Invertebrate Ecology in Perth in October, which attracted close to 50 participants from Australia and New Zealand. John presented his work on African black beetle population regulation in a Mediterranean climate, and **Ben Warton** presented the first results from their work on enhanced biodegradation of metham sodium soil fumigant.

Bob Sutherst (CSIRO, Brisbane) and **Ron Stinner** (IPMNET, USA) gave a presentation in October on the development of national IPM networks on the internet. **Owain Edwards** presented a paper at the 7th ACGIE on the suitability of alternative pasture legume species to bluegreen aphid feeding. Owain also attended an international symposium in Montpellier, France on "Evaluating Indirect Ecological Effects of Biological Control", which was organised by **John Scott** (CSIRO, Montpellier). After the conference, Owain visited **Hugh Loxdale** at Rothamsted Institute in the UK to discuss the research project of PhD student **Dean Baker**. **James Ridsdill-Smith** has commenced a research project identifying resistance mechanisms to aphids in narrow-leafed and yellow lupins, which should complement Owain's work on the ecology and genetics of aphids in pulses and lupins. James gave the keynote closing address at the 7th ACGIE entitled "Future perspectives for grassland invertebrate research in the new millenium". **Shao Fang Wang** (CLIMA) also presented on her and James' work on resistance to redlegged earth mite in *Trifolium glanduliferum*. **Dr. Khattak** and **Mr. Alamzeb**, two scientists on IAEA fellowships from Peshawar, Pakistan, had extended visits to CSIRO, UWA, and AgWest to work on resistance to heliothis in chickpea. **Laurence Mound** visited CSIRO in December while in Perth for the Dampier 300 conference, where he gave a keynote address in the co-evolution symposium about thrips and *Acacia* trees.

Tim Woodburn and **Paul Yeoh** presented at the 7th ACGIE, Tim on his previous work on the biological control of nodding thistle and Paul on biocontrol of doublegee. Tim and Paul are currently researching optimal release strategies for red apion (*Apion mimiatum*) against doublegee. **Kathryn Batchelor** and Tim continue the distribution of the leafhopper (*Zygina* sp.) against bridal creeper throughout southern Australia, and are pleased with the way that the leafhopper has infected the weed at the release sites. Kathryn travelled to South Africa in October to see bridal creeper in its native habitat, and was really surprised to see what a rare plant it is there. She also collected *Eurytoma* sp., a potential biocontrol agent of bridal creeper developing seeds that she is now host testing in quarantine. Tim will travel in late January to Canberra and participate in a CRC Weed Management Systems (CRCWMS) workshop on soil seedbanks. **Kristel Wensiker**, a CRCWMS scholar, had a really good week recently. She was awarded first class honours by Murdoch University for a thesis on impact of *Trichosirocalus horridus* on slender thistles (*Carduus* spp.), and AgWA offered her a job! She was jointly supervised by Tim and **Mike Calver** of MU. **Rieks van Klinken** from CSIRO Brisbane visited the Perth laboratories in November after his field trip to Karratha to check progress on biocontrol of mesquite.

Agriculture Western Australia

Francoise Berlandier has been furiously analysing data from her 1999 field trials investigating the effects of aphid feeding damage to lupin and canola crops. These are being written up for the upcoming Crop Updates meeting in Perth. Also on the priority list is writing GRDC progress reports which are progressively getting more complicated and frustrating each year! Francoise also presented a paper at the 7th ACGIE on aphid resistance in annual pasture legumes. Staff movements have been fairly static at South Perth except for new Grainguard/Hortguard entomologist **Johannes (John) Botha** who has commenced work with the Agency based at Bunbury. John, who has recently arrived from South Africa, will be working toward helping to prevent incursions of unwanted pests into Western Australia, particularly for the grains and horticultural industries. He was formerly employed by INFRUITEC in Stellenbosch, and also by Nietvoorbij Centre for Fruit & Wine in South Africa.

Deborah Thackray has been busy developing a decision support system (DSS) to forecast the need for insecticides to control aphid vectors of BYDV in different districts each year. A preliminary forecast will be available in May 2000 through the Internet (http://www.agric.wa.gov.au). Once the DSS has been refined using data on virus reservoirs and aphid feeding damage collected in year 2000, it will be available through other means as well as the Internet, and predictions will also be given via AgWest's PestFax. Deb's paper at the 7th ACGIE, with **Roger Jones**, was on the role played by nearby pastures in epidemics of aphid-borne virus diseases in crops in regions with Mediterranean-type climates. Also

representing AgWest at the 7th ACGIE were **Rob Emery** presenting on Western Australian cockchafers and **Stewart Learmonth** (Manjimup) presenting on the importance of monitoring in protecting potatoes from soil pests in rotations.

Curtin University of Technology

In the latter quarter of last year, Western Australia experienced an exceptional influx of entomologists, partly due to the hosting of the ACGIE Conference, and partly to the Dampier 300 meeting (joint conference of the Australian Systematic Botany Society, the Society of Australian Systematic Biologists and the Invertebrate Biodiversity and Conservation group). The latter meeting was well attended by about 40 entomologists and invertebrate biologists, with arthropod papers featuring prominently in sessions concerning, systematics, arid zone biodiversity, co-evolution, biogeography, subterranean biota, conservation and sampling protocols. The next meeting in the Invertebrate Biodiversity and Conservation series will take place in Adelaide in about two years time.

After his stint, along with **Mark Harvey** (WA Museum) and others, on the Dampier 300 organising committee, **Jonathan Majer** has not been able to relax due to his recent elevation to Head of the School of Environmental Biology. Appointment to this position seems to be an occupational hazard that comes from promotion to professor. Plans under the new regime include the preparation of streams in the Environmental Biology degree concerned with Restoration Biology, Aquatic Biology and Biodiversity Studies. It is anticipated that invertebrates will receive good coverage in each of these courses of study.

University of Western Australia

Prof. Win Bailey has been director of the Forensic Science Unit for the last year running a postgraduate course in FS. The key player is **Ian Dadour** who now has an extremely high profile within Australia in Forensic Entomology. The new course in Forensic Entomology gets underway 1st semester 2000 with 40 students enrolled. Lots of decomposing pigs and maggots to serve up. Ian and Win are supported by a SPIRT grant until 2002. This is a three part grant looking at flies associated with cadavers, nuisance flies (stable fly) and aquatic diptera as a measure of stream health.

Henry Bennett-Clark visited UWA to work with Win looking at the fascinating biomechanics of sound production of a probably undescribed species of burrow-making cricket of the Southern Murcheson within the genus *Rufocephalus*. **David Rentz** (ANIC - CSIRO) and **You Ning Su** (graduate student of **Penny Gullen**, ANU) are working with Win on the distribution of endangered katydids supported by a Heritage Grant with CALM. **Prof. John Alcock** (Arizona State University) is also visiting UWA to work on Dawson's Burrowing Bee in the Murcheson. **Prof. Bill Cade** of Brock University (Ste. Catherines, Canada) will be visiting Win in March. **Leigh Simmons** was awarded a Senior ARC Research Fellowship for a second term to continue his work on sperm competition in insects.

Western Australian Museum

In October, **Tim New** and **Don Sands** visited Perth to conduct a Butterfly Action Plan workshop (on 16th) and this was attended by a small band of local butterfly enthusiasts. **Shelley Barker** (SA), **Dave Rentz** and **You Ning** (ACT) **and Peter McQuillan** were other visitors in late October-early November and the WA Insect Study Society was fortunate to have Tim, Dave and Peter as guest speakers at three of their meetings - a good way to celebrate the 10th anniversary of the WAISS.

The AGM of the Council of Heads of Australian Entomological Collections (CHAEC) was held in Perth on 5 December and brought a few more entomologists from interstate. **Terry Houston** discussed data sharing with one of the visitors, **Ken Walker**, specifically in relation to Ken's plans for a database of Australian bees. In November and December, after some years of failure to even see a spoon-winged lacewing (*Chasmoptera* spp.), Terry got lucky and encountered three species. One captive female produced eggs and a first instar larva was hatched providing the first insights into the life history of these elusive creatures.

Owain EDWARDS
Regional Councillor

NEW PUBLICATION

Halffter, G. and Matthews, E. G. 1999. The Natural History of Dung Beetles of the Subfamily Scarabaeinae. Facsimile reprint. Medical Books, Palermo. Soft cover, 320 pp., figs. $75 plus GST, postage and handling.

This is a reprint, with a new cover, and a foreword by Mario Zunino, of a work published originally in *Folia Entomologica Mexicana* in 1966. It covers all aspects of food relationships, ecology, behaviour and fossil history of Scarabaeinae known up to that time. Demand for the work, which is long out of print, has continued unabated to the point where it was decided to issue a facsimile edition

which is available on the international market from Hillside Books <lr@insects.demon.co.uk> for the price of 28 pounds sterling. The South Australian Museum has acquired a limited stock of this work and is offering it for sale within Australia at the equivalent of the RRP as long as stocks last. Inquiries to Jennifer Thurmer, Publications Manager, South Australian Museum, North Terrace, Adelaide SA 5000 <thurmer.jenni@saugov.sa.gov.au>.

COMING EVENTS

10TH INTERNATIONAL SYMPOSIUM ON TRICHOPTERA
Potsdam, Germany
July 30 - August 5, 2000

Details and application form can be obtained by writing to:
Dr Arturs Neboiss
Dept of Entomology
Museum of Victoria
71 Victoria Crescent
Abbotsford, Vic 3067

XXI International Congress of Entomology
Iguassu Falls, Brazil
20-26 August 2000
Entomologists Preserving Biodiversity
See - *Myrmecia* **34**(1): 30-31.
Please refer to (http://www.embrapa.br/ice)
Or contact: ice@sercomtel.com.br

Arbovirus Research in Australia-8
Mosquito Control Association of Australia-4
Conference
3-7 July 2000
Couran Cove Ecotourism Resort
South Stradbroke Island
Gold Coast, Queensland
Registration forms are available from:
Michael Brown
QIMR,
PO Royal Brisbane Hospital, Qld 4029
Phone: [07] 3362-0352
Email: **michaeBr@qimr.edu.au**.

THE NEW PANORAMA OF ANIMAL EVOLUTION
"
The New (XVIII) International Congress of Zoology
Athens, Greece
28 August-2 September. 2000

Details: ***Myrmecia*** **34(3): 24**
Contact:
Dr Rosa Polymeni
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URL http://www.york.biosis,org/zrdocs/new_icz.

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Dr D.E. Walter, AES Secretary, c/o Dept. of Entomology
University of Queensland, QLD 4072

We the undersigned

Proposer: ....
(print name here) (signature)

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Occupation or Appointment: .....

Interests, experience and publications in entomology for publication in the News Bulletin *Myrmecia* (please attach brief resumé):

I accept nomination and undertake if elected to abide by the rules of the Society and to pay annual subscriptions by the date prescribed.

Signature: ..... **Date:** .....

For **2000**, new student/retired members - $25.00; new full members - $55.00. **Payment with nomination required.** (NB. These rates only apply for new memberships.)

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